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FINAL
GENERAL MANAGEMENT PLAN/
ENVIRONMENTAL IMPACT STATEMENT
(VISITOR MANAGEMENT AND RESOURCE PROTECTION PLAN)



ZION
National Park • Utah



2002-004242/NF

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FINAL
GENERAL MANAGEMENT PLAN /
ENVIRONMENTAL IMPACT STATEMENT
(VISITOR MANAGEMENT AND RESOURCE
PROTECTION PLAN)

ZION

National Park • Utah

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"There is an eloquence to their forms which stirs the imagination with a singular power and kindles in the mind. Nothing can exceed the wondrous beauty of Zion . . . in the nobility and beauty of the sculptures there is no comparison."

Clarence Dutton 1880

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FINAL
GENERAL MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT
(VISITOR MANAGEMENT AND RESOURCE PROTECTION PLAN)

ZION NATIONAL PARK
Washington, Iron, and Kane Counties, Utah

This *Final General Management Plan / Environmental Impact Statement* describes and analyzes a preferred alternative and three alternatives for managing and using Zion National Park. The plan is intended to provide a foundation to help park managers guide park programs and set priorities. The alternative that is finally chosen as the plan will guide the management of Zion National Park over the next 20 years.

The "no-action," or status quo, alternative provides a baseline for comparing the other three alternatives. Under this alternative, park managers would undertake no new construction projects or make any major changes in managing visitor use, except to implement the transportation system in the main canyon.

Three action alternatives would create zones within the park to protect resources and provide opportunities for a range of visitor experiences. All three action alternatives limit park visitation in some backcountry areas, although many of these areas are inaccessible anyway due to their steep topography. In addition, all of the action alternatives call for making adjustments to the park boundary. The **preferred alternative** would emphasize proactive management to address impacts caused by increased visitor use. Under this alternative, a range of quality visitor experiences would continue to be provided but visitor numbers may be limited or reduced in parts of the recommended wilderness. A few new visitor facilities would be built in frontcountry areas. **Alternative A** would provide greater opportunities for increased use of Zion. Access would be improved inside the park by upgrading or building trails and designating new routes. Additional picnic areas, interpretive facilities, and backcountry campsites also would be provided. **Alternative B** emphasizes the additional protection of park resources while still providing opportunities for a range of visitor experiences. Under alternative B, the number and frequency of shuttles going from Zion Canyon Lodge to the Temple of Sinawava would be reduced, and the lodge would be converted to a research/environmental education center.

A wild and scenic river suitability/eligibility study is included in this document for all of the drainages in the park and several drainages on adjacent lands managed by the Bureau of Land Management (BLM). The three action alternatives recommend the inclusion of five drainages and their tributaries in the park and six river segments on BLM lands in the national wild and scenic rivers system. The joint wild and scenic river study conducted on public lands contiguous to the park constitutes an amendment to the BLM's 1999 *St. George Resource Management Plan*.

This document also discusses the potential consequences of each alternative's actions on natural resources, visitor use and experiences, and the socioeconomic environment. In general, the three action alternatives would better protect the park's natural resources than the no-action alternative. Alternative A would provide for greater visitor use than today, but also would have the most negative impacts on natural resources. Alternative B would provide the greatest protection of natural resources, but would have the most negative impacts on visitor use. The preferred alternative would best protect the park's natural resources while also maintaining a range of high-quality visitor experiences.

For questions about this document, contact the park planning coordinator, Darla Sidles, Zion National Park, Springdale, UT 84767-1099, or call 435-772-0211.

United States Department of the Interior • National Park Service

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HOW THIS DOCUMENT IS ORGANIZED

This document has five main parts. The "Introduction" explains why the plan is necessary and what the plan will accomplish. It provides background information about Zion National Park and describes the park's purposes, significance, and mission goals. The Introduction also identifies the major issues and concerns of focus of this plan and describes National Park Service (NPS) policies and standard park practices that have guided, and continue to guide, the management of Zion National Park.

The "Alternatives, Including the Preferred Alternative" part presents alternatives for managing Zion National Park. The no-action alternative describes the present approach to managing Zion without the implementation of a new management plan. The preferred alternative describes the National Park Service's preferred approach for managing the park. Alternatives A and B present other options for managing Zion.

The third major part is the "Affected Environment." This part describes selected natural resources of the park and visitor experiences and uses. This part also describes the socioeconomic conditions in the region surrounding Zion. Information in the "Affected Environment" part provides the context for analyzing the impacts of the management alternatives.

The next part, "Environmental Consequences," describes the effects each alternative would have on key park

resources, visitor experiences and uses, and the socioeconomic environment in the region.

The last part, "Consultation and Coordination," describes the process the planning team used to involve the public and consult with other agencies during the development of this plan. This part also includes a summary of the major changes that were made in the draft document, clarifications of commonly raised public concerns, and copies of the letters and responses to the comments.

The appendixes include a summary of the key legal mandates that affect management and planning for the park, a description of the relationship of the *General Management Plan* to other planning efforts, detailed definitions of the management zones, a summary of how this plan was developed, a detailed description of how the drainages in the park and adjacent BLM lands were evaluated for inclusion in the national wild and scenic rivers system, and a summary of the proposed new research natural areas. An appendix also contains procedures to be followed by parties who wish to protest the Bureau of Land Management's proposed decision and plan amendment regarding wild and scenic river eligibility and suitability on public land river segments addressed in this plan.

SUMMARY

The purpose of this conceptual plan is to describe the general path the National Park Service intends to follow in managing Zion National Park over the next 20 years. The approved plan will provide a framework for proactive decision making on such issues as visitor use, natural and cultural resource management, and park development, which will allow park managers to effectively address future problems and opportunities. In most cases, new development outside the park would take place to meet visitor needs.

ALTERNATIVES

The planning team developed four alternatives for managing visitor uses and resources in Zion National Park. Each alternative presents a different management approach for directing visitor use and resolving conflicts. The alternatives were based on the park's purposes and significance, the National Park Service mission, other legal mandates and policies, park issues, public views, and information on visitor use patterns and park resources.

The **no-action** alternative provides a baseline for evaluating the changes and impacts of the three action alternatives. Under this alternative, park managers would continue to manage Zion as it has in the past, relying on the 1977 master plan and related existing plans. No new construction or major changes would take place, except for already approved developments. All of the park's existing facilities would continue to be operated and maintained as they have in the past. Park managers would continue to limit visitor day use in the Left Fork of North Creek and the Narrows, and overnight use in the Narrows, along the West Rim, and La Verkin Creek/Hop Valley.

The three existing research natural areas would be managed as they have been in the past. Parunuweap Canyon would continue to be a proposed research natural area and be closed to all recreational use. The riverbank armor and levees along the North Fork of the Virgin River in the main Zion Canyon would be maintained. Most of the park (90%) is recommended for wilderness designation and would continue to be managed under the provisions of the Wilderness Act.

The **preferred alternative** is the plan the National Park Service is proposing to implement for Zion National Park over the next 20 years. Under this alternative, park managers would make several changes to proactively address impacts resulting from increased levels of visitor use. The park would be zoned to ensure that resources were protected and opportunities were provided for a range of quality visitor experiences. As in all of the alternatives, most of the park (90%) would continue to be recommended for wilderness designation and would be managed according to the provisions of the Wilderness Act. In the frontcountry no new major visitor facilities would be provided; however, small visitor facilities, such as picnic sites and restrooms, could be built in several areas, including the Kolob Canyons and the east entrance. Voluntary visitor shuttles may run along the Zion-Mt. Carmel Highway to the east entrance. The Zion Canyon Lodge would continue to operate as it has in the past. Part of the North Fork of the Virgin River in the main Zion Canyon would be restored to a more natural condition.

In the backcountry several management actions would be taken. Three existing research natural areas (21% of the park) would be deauthorized, while new research natural areas covering 6% of the park would

SUMMARY

be designated. Interim group size limits and new interim group encounter rates would be instituted pending the completion of the wilderness management plan. Park managers may need to limit or reduce visitor numbers on 12 trails and routes in the recommended wilderness, including part of the Narrows, Middle Fork of Taylor Creek, and La Verkin Creek. Only authorized research and NPS-guided educational groups would be allowed in 9,031 acres in remote backcountry areas (including Parunuweap Canyon) due to their designation as research natural areas.

Alternative A would provide opportunities for more widespread and increased use of Zion, while still protecting resources and providing opportunities for a range of visitor experiences. Like the preferred alternative, park managers would apply management zones throughout the front and backcountry to proactively manage visitor use. The upgrading or building of trails and the designation of new routes would improve access inside the park. Additional visitor facilities, including picnic areas, information facilities, and backcountry campsites, would be provided at Lava Point, the Kolob Canyons area, the east entrance area, and along the Kolob-Terrace Road and Zion-Mt. Carmel Highway. The Zion Canyon Lodge would continue to operate as it has in the past. As in the preferred alternative, under **alternative A** part of the North Fork of the Virgin River in the main Zion Canyon would be restored to a more natural condition.

As in all of the alternatives, most of the park (90%) would continue to be recommended for wilderness designation and would continue to be managed according to the provisions of the Wilderness Act. New research natural areas, covering about 4% of the park, would be designated, while the three existing research natural areas would be deauthorized. Interim group size limits and new interim encounter rates would be instituted in the backcountry. Park managers may need to

limit or reduce visitor numbers in four areas in the recommended wilderness — part of the Narrows, Mystery Canyon, Orderville Canyon, and the La Verkin Creek trail. Only authorized research and NPS-guided educational groups would be allowed on 6,145 acres in remote backcountry areas due to their designation as research natural areas. However, under this alternative Parunuweap Canyon would be open to limited NPS or NPS-sanctioned guided interpretive trips along the river.

Alternative B focuses on providing increased protection for park resources while still providing opportunities for a range of visitor experiences. Like the preferred alternative, management zones would be applied throughout the front and backcountry to proactively manage visitor use. In the frontcountry a full-service visitor facility would be built near the east entrance, and a mandatory shuttle system would be implemented along the Zion-Mt. Carmel Highway. **Alternative B** would keep other new development in the park to a minimum. In several areas trailheads would be removed and trailhead parking would be reduced. The Zion Canyon Lodge would be converted into a research/environmental education facility. Like the preferred alternative, part of the North Fork of the Virgin River in the main Zion Canyon would be restored to a more natural condition. In addition under this alternative the number and frequency of shuttles going from the Zion Canyon Lodge to the Temple of Sinawava would be reduced to decrease resource impacts and improve the quality of the visitor experience along the Zion Canyon scenic drive and in the Narrows.

As in all of the alternatives, most of the park (about 90%) would continue to be recommended for wilderness designation and would be managed according to the provisions of the Wilderness Act. Under **alternative B** about 14% of the park (including

Parunuweap Canyon) would be designated as research natural areas, while the three existing research natural areas would be deauthorized. Interim limits on group size and new interim limits on encounter rates would be instituted in the backcountry. Park managers may need to limit or reduce visitor numbers on 17 trails and routes in the recommended wilderness, including Hop Valley, Taylor Creek, Orderville Canyon, Observation Point, and upper Emerald Pool. Only authorized research and NPS-guided educational groups would be allowed on 20,348 acres in remote backcountry areas due to their designation as research natural areas.

Boundary Adjustments and Easements

All three action alternatives call for adjusting the park boundary. The National Park Service would propose five Bureau of Land Management (BLM) areas, totaling approximately 950 acres, for transfer to the park. Nine access easements, totaling about 15 miles, and three conservation easements, totaling 2,220 acres, would be proposed on private lands outside the park. Congressional authorization would be required for all these actions.

Wild and Scenic River Proposals

All three action alternatives propose that five drainages and their tributaries in the park, and six tributaries on BLM lands adjacent to the park, be included in the national wild and scenic rivers system. The five drainages in the park are: the North Fork of the Virgin River above and below the Temple of Sinawava, the East Fork of the Virgin River, North Creek, La Verkin Creek, and Taylor Creek. The drainages partly on BLM lands are: Kolob Creek, Goose Creek, Shunes Creek, Willis Creek, Beartrap Canyon, and the Middle Fork of Taylor Creek. Congress-

sional authorization would be required for inclusion of these drainages in the national wild and scenic rivers system.

ENVIRONMENTAL CONSEQUENCES

The planning team evaluated the potential consequences the actions of the alternatives would have on natural resources, visitor use and experiences, and the socioeconomic environment. It was determined that none of the alternatives would appreciably affect cultural resources.

Under the **no-action** alternative, most of the impacts on natural resources would likely be due to the increased use of the park. Moderate to major, long-term impairment of floodplain functions and processes would continue. The severity of impacts on microbiotic soils would increase, with a moderate to major loss of soils in the most extensively developed and used areas. With existing river channelization measures and high levels of visitor use, Virgin spinedace habitat and the riparian community would also continue to degrade, accompanied by minor to major, long-term, negative effects. There would be a minor to moderate, long-term increase in human exposure to flood hazards along the North Fork of the Virgin River. Even with mitigation measures, minor damage or loss of hanging garden vegetation would likely continue.

The application of use restrictions in specific areas or times of year would prevent adverse impacts on the Mexican spotted owl population. Increased use of the park would likely lead to minor to moderate, negative impacts on desert bighorn sheep foraging areas and air and water quality in localized areas. There would be a moderate reduction in natural soundscapes from increased visitation and vehicle use in some areas.

SUMMARY

Visitors would continue to have unrestricted access to many park resources and the opportunity to choose when they would like to visit these resources. However, the quality and range of visitor experiences within the park would continue to decrease gradually, especially in popular areas in both the frontcountry and backcountry. Crowding and traffic congestion would increase in frontcountry areas (excluding the main Zion Canyon), and opportunities for solitude and quiet would diminish in the backcountry. Overall, these activities would result in a long-term, minor to moderate, negative impact on the visitor experience.

The **no-action** alternative would have a positive, negligible effect on the local/regional economy.

The **preferred alternative** would have both positive and negative effects on the park's natural resources. Minor to moderate, localized, adverse impacts on air quality would occur from increased traffic on the park's main roads, although if the use of vehicles were limited on the Kolob Canyons Road, a localized improvement of air quality would result. Minor to moderate, localized, short-term, adverse impacts on water quality would occur from increased use, construction, and river restoration activities. Restoring sections of the North Fork floodplain would have a major, beneficial effect on floodplain functions and values in that reach, and it would enhance spinedace habitat. It also would have a minor to moderate, long-term, beneficial impact on riparian communities. However, there would be a minor, long-term increase in the number of people exposed to flood hazards. Moderate to major impacts on microbiotic soils would occur in localized areas, which would result in a major loss of soils in existing areas of extensive development and use, as well as in newly developed frontcountry areas.

The zoning and use restrictions of the preferred alternative would also avoid adverse impacts on the Mexican spotted owl population. The potential for minor damage or loss of vegetation in accessible hanging gardens would still exist, however. Disturbance from visitors in sheep foraging areas and from scientists in lambing areas would be negligible to minor; limiting use in Gifford Canyon would have a minor benefit. With mitigation and visitor management actions, this alternative would not likely adversely affect the southwestern willow flycatcher, which may result in long-term beneficial effects. Under this alternative, there would be a moderate reduction in natural soundscapes due to increased noise in areas with greater levels of visitation and vehicle use. If vehicle use was reduced on the Kolob Canyons Road this would lead to a minor reduction in noise levels. Instituting a voluntary shuttle system on the east side of the park also would lower noise levels.

Under the preferred alternative, the existing range of visitor experiences would be maintained. Zoning most of the park as pristine would help ensure that opportunities for experiencing solitude and natural soundscapes were available in most of the park. Providing a few new visitor facilities, such as picnic areas and restrooms, would have a minor, positive effect on some visitors' experiences. New interim encounter rates would likely have a negligible effect on most visitors in the recommended wilderness area. Use levels on 12 trails and routes may be limited or reduced, and some visitors may feel that their choices and access were being curtailed in the recommended wilderness area. A few saddle stock users also may be adversely affected by the application of the zones in the recommended wilderness. Overall, there would be a minor, positive effect on most visitor experiences in Zion's front and backcountry.

The preferred alternative would likely result in a positive, negligible change in the local/regional economy. Some individuals and firms may realize moderate to major, positive economic benefits.

Alternative A would result in many of the same positive and negative impacts on natural resources as those described under the preferred alternative. However, alternative A has a higher potential to impact the resources in certain areas than do the other alternatives. In particular, there would be a greater potential for impacts caused by increased visitor use within a large portion of the desert bighorn sheep range in canyons along the Zion-Mt Carmel Highway. The amount of new development proposed under alternative A also would cause the greatest loss of microbiotic soils associated with developed areas and areas with high visitor use (although from a parkwide perspective the impact would be minor).

Under alternative A, impacts on the visitor experience would be similar to those of the preferred alternative, except that driving and biking opportunities in the frontcountry and hiking opportunities in the backcountry could be expanded under alternative A compared to existing opportunities. Opportunities for experiencing solitude and natural soundscapes would still be preserved, and visitors would have additional opportunities to enjoy the park's recommended wilderness, including Parunuweap. However, use levels may be limited or reduced in four areas. Overall, alternative A would likely have a moderate, positive impact on most visitor experiences in Zion's frontcountry, and moderate, positive and negative effects on visitor experiences in the backcountry.

The actions in alternative A would likely result in a negligible to minor, positive change in the local/regional economy. Some individuals and firms may realize moderate to major, positive economic benefits.

Under **alternative B**, restoring sections of the North Fork would have the same moderate to major, long-term, beneficial impacts as the other action alternatives. However, this alternative would likely result in many other beneficial effects on the park's natural resources. Decreased visitor use, particularly in portions of Zion Canyon, would generally have minor to moderate, long-term, beneficial effects on a number of natural resources, including spinedace habitat, hanging gardens, air and water quality, microbiotic crusts, riparian communities, and desert bighorn sheep foraging areas. Additionally, this alternative would not be likely to adversely affect Mexican spotted owl and southwestern willow flycatcher populations. The removal of spring diversion structures within Zion Canyon and the subsequent restoration of the streams and riparian zones associated with the springs would have a minor, long-term, beneficial effect. Decreased use in portions of Zion Canyon would also result in a minor to moderate decrease in the number of people exposed to flood hazards.

Under alternative B, opportunities for experiencing solitude and natural soundscapes would be preserved in most of the park, and visitors seeking these experiences would be positively affected. Converting the Zion Canyon Lodge to an education/research center would positively affect the experiences of some visitors and school groups. However, fewer visitors would have the opportunity to stay overnight in the park and to ride horses. Use levels may be limited or reduced on 17 routes and trails, including several popular trails. Thus, fewer visitors would be able to go into the wilderness area with most of the park being zoned as pristine or research natural areas, although those people who do go in the wilderness area would have a high-quality experience. The mandatory Zion-Mt. Carmel shuttle would reduce personal choices in this part of the park. Overall, alternative B would have a

moderate to major, negative impact on many visitor experiences in the frontcountry, and moderate, positive and negative impacts on visitors in the backcountry.

The concession business and their employees also would experience moderate to major,

negative impacts, although other businesses and individuals would benefit from the actions in the alternative. Overall, the actions in alternative B would result in a negligible to minor, negative change in the local/regional economy.

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INTRODUCTION



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PURPOSE OF AND NEED FOR A PLAN

The "Introduction" provides background information about the park and the planning process. This part describes why the National Park Service (NPS) has prepared this *Final General Management Plan / Environmental Impact Statement* (plan/EIS) for Zion National Park and what the intent of the plan is. It also provides a brief description of Zion National Park; identifies the park's purposes, significance, and mission goals; identifies the major issues and concerns of focus in this plan; and describes park policies and practices that guide management of Zion.

As one of 380 units in the national park system, Zion National Park is under the management of the National Park Service. The Park Service manages all park units in accordance with the mandate in its 1916 Organic Act and other legislation to conserve resources unimpaired for the enjoyment of future generations. To help achieve this mandate, the National Parks and Recreation Act of 1978 and NPS *Management Policies* require each national park unit to have a broad-scale general management plan (GMP).

The purpose of this *General Management Plan* is to describe the general path the National Park Service intends to follow in managing Zion National Park over the next 20 years. The plan will not provide specific and detailed answers to every issue or

question facing Zion. However, the approved plan will provide a framework for proactive decision-making on such issues as visitor use, natural and cultural resource management, and park development, which will allow park managers to effectively address future problems and opportunities.

Zion National Park is currently operating under a master plan approved in 1977. In the 23 years since the National Park Service wrote the master plan, many changes have occurred in the park and surrounding area and in park management. In particular, park visitation has grown dramatically, with visitor use levels doubling between 1982 and 1997. This increase in use has affected park resources and the diversity of visitor experiences offered in Zion. The Zion Canyon shuttle system also has changed the visitor experience in the park. A new plan is essential for providing guidance to manage Zion's visitors in the 21st century, and thus ensure the preservation of park resources and provision of opportunities for visitors to have quality park experiences.

Both the National Parks and Recreation Act and NPS policies require general management plans to address visitor carrying capacity. One of the primary purposes of this plan is to achieve this requirement. Carrying capacity is defined under the VERP framework (see box) as the type and level of visitor use a park can accommodate while sustaining

The Subtitle of the Zion *Final General Management Plan*

Like all general management plans, the Zion *General Management Plan* is a conceptual document that establishes a management philosophy and framework for decision making and problem solving in Zion. It is intended to provide guidance over a 20-year time frame. However, the Zion plan incorporates elements of the National Park Service's Visitor Experience and Resource Protection (VERP) framework which most past general management plans have not done (NPS 1997a). The VERP framework provides guidance to planners and managers for addressing carrying capacity and assessing visitor use impacts on park resources and visitor experiences. To emphasize the importance of managing visitors and protecting resources, the Zion *General Management Plan* was subtitled a "Visitor Management and Resource Protection Plan."

INTRODUCTION

resource and social conditions that complement the purposes of the park and its management objectives. In other words, carrying capacity is a prescription for the levels of visitor use in relation to various natural resource conditions. To set up a framework for addressing carrying capacity, for this document, the planning team divided the entire park into zones that describe differing desired resource conditions and visitor experiences. (Note that to fully implement the VERP framework, a follow-up implementation plan is needed to identify key social and natural resource indicators to be monitored in each of the park's zones, set standards [minimum acceptable conditions] for each indicator, and develop a monitoring program.)

In addition to meeting the requirements for addressing visitor use management, park managers needed this new plan to address other issues and concerns that have arisen in the past two decades. These issues include those related to research natural areas (RNAs) (i.e., areas administratively designated by federal land management agencies

for research and educational purposes or to maintain biological diversity), noise, and land uses adjacent to the park. (For a complete list of issues addressed in the plan, see "Planning Issues and Concerns.") With most of Zion recommended for wilderness designation, the Park Service also needs this new plan to address how this designation will affect park management (e.g., changes in park zoning). Finally, a new plan presents an opportunity for park managers to explore and recommend other changes related to managing Zion, such as proposing boundary adjustments and wild and scenic river designations.

This *Final General Management Plan / Environmental Impact Statement* includes revisions that were made in the preferred alternative and the other alternatives in response to public comments on the draft document. A minimum of 30 days after this final environmental impact statement is published, the National Park Service will select and approve the final plan, and publish a record of decision in the *Federal Register*. The plan will then be implemented.

PLANNING BACKGROUND

Note: The following sections, through "Natural History," are adapted from *Zion: Sanctuary In the Desert*, by Nicky Leach, copyright 2000, Sierra Press.

It is one of those clarion spring mornings in Zion that comes close to earthly perfection. A red mackerel dawn sky has limned Renaissance blue in the full light of day. A whisper of a breeze ruffles the new-leaved cottonwoods along the Virgin River and sets the tall ponderosa pines creaking in their moorings in crevices high in the cliffs. Two red-tailed hawks circle lazily on the thermals, then drop out of sight into a huge, desert-varnished window-blind arch in the pale sandstone canyon wall. Mule deer — the soft rustlers at the tent door in the predawn gloom — jump daintily away on ballerina legs then dart to deeper cover, safe from human eyes and the hungry gaze of the mountain lion.

Above the valley, the domes, spires, and temples of Zion seem to raise great angular heads to the heavens, their time-worn, craggy faces streaked and etched by falling water and year-in, year-out exposure to the weather. "There is an eloquence to their forms which stirs the imagination with a singular power and kindles in the mind," wrote geologist Clarence Dutton in 1880. "Nothing can exceed the wondrous beauty of Zion . . . in the nobility and beauty of the sculptures there is no comparison."

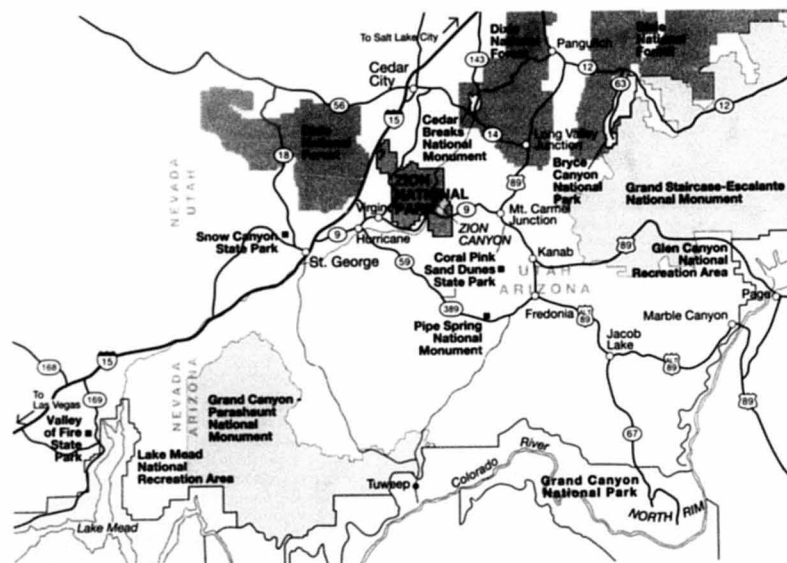
Although it gets all the press, Zion Canyon is just a fraction of a park that might better be described as a giant outdoor museum, preserving some of the world's most extraordinary geological, archeological, and natural resources. The heart and soul of Zion, though, is the Virgin River, whose North Fork rises to the northeast near Cedar Breaks. The river eats its way through the

southern Markagunt Plateau, then confluences with the East Fork in Zion Canyon downstream from Parunuweap Canyon. From here, it continues down to Hurricane and out of Utah via the Virgin River Gorge, joining the Colorado River in Lake Mead for the last leg to the Gulf of California. The Southern Paiute call it Parus ("whirling water"), but its European name was given in 1776 by the Spanish Dominguez-Escalante Expedition, priests who understood firsthand the miracle of water in the desert.

Although only a tiny fraction of Utah is contained within the park, 85% of the state's flora and fauna species are found here, including 800 plant species, 289 bird species, and 75 mammal species. This can partly be explained by the park's 4,000- to 9,000-foot elevation span, which takes in low-desert scrub, mid-elevation chaparral, and subalpine evergreen forests. But there could never be so much life without the presence of water — and this, Zion has in spades. From the year-round flows of the Virgin River to the seeping sandstone cliffs of the canyon narrows, a remarkable number of living things set up shop and thrive. Some, like the pearl-sized Zion snail of the Zion Narrows, live nowhere else.

NATURAL HISTORY

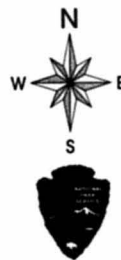
Flora and fauna of four different life zones — desert, riparian, woodland, and coniferous forest — are found within the park. But with the Great Basin, Mojave, and Colorado Plateau deserts converging here and fluctuations of temperature, moisture, exposure, and soil type in this canyon-and-mesa topography, Zion's hugely diverse flora and fauna never cease to amaze naturalists.



Location

Zion National Park, Utah

United States Department of the Interior • National Park Service
DSC • August 2000 • 116 • 20025a



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BRIEF DESCRIPTION OF THE PARK

Located in Washington, Iron, and Kane Counties in southwestern Utah, Zion National Park encompasses some of the most scenic canyon country in the United States (see the Location map). The park is characterized by high plateaus, a maze of narrow, deep, sandstone canyons, and striking rock towers and mesas. Zion Canyon is the largest and most visited canyon in the park. The North Fork of the Virgin River has carved a spectacular gorge here, with canyon walls in most places rising 2,000 to 3,000 feet above the canyon floor. The southern part of the park is a lower desert area, with colorful mesas bordered by rocky canyons and washes. The northern sections of the park are higher plateaus covered by forests.

Zion is one of the earliest additions to the national park system. On July 31, 1909, President Taft issued a proclamation setting aside 15,200 acres as the Mukuntuweap National Monument. In 1918, another presidential proclamation enlarged the monument to 76,800 acres and changed its name to Zion National Monument. Congress established the area as a national park in 1919. A second Zion National Monument (now called the Kolob Canyons) was established by presidential proclamation in 1937. Congress added the Kolob Canyons to Zion National Park in 1956. The park currently encompasses 148,016 acres. An additional 3,490 acres of private inholdings are present in the Kolob Terrace area, on the west side of the park. (The inholding acreage and all of the other park acreage figures included in this document are based on geographic information system (GIS) calculations. These figures may not correspond with legal description acreages.)

Zion is part of the Southwest's "Grand Circle" of national parks, monuments, historical areas, and recreational areas. Visitors reach the park via Interstate 15, which provides access to the Kolob Canyons area, and Utah Route 9. Zion is 158 miles northeast of Las Vegas and 320 miles southwest of Salt Lake City. The town of Springdale is less than a mile from the park's south entrance. Other nearby towns include Kanab (41 miles from the Zion Canyon Visitor Center), St. George (43 miles), and Cedar City (60 miles).

At the lowest elevations, plants and animals have adapted to desert conditions in canyon-bottom meadows and rocky ledges. Waxy-coated pricklypear cactus nestles beside woody sagebrush and rabbitbrush, tough-stemmed Indian paintbrush, and poisonous sacred datura, while several varieties of milkvetch and prince's plume occupy sandy, selenium-rich soil pockets. Desert animals keep cool in burrows, dens, or among slickrock ledges in the daytime. Desert cottontails, jackrabbits, Merriams kangaroo rats, and others become active at dusk or dawn, timing their movements to avoid coyotes, gray foxes, ringtails, and other predators. Most visible in the daytime are rock squirrels, pinyon jays, and the occasional whiptail lizard or other reptile disturbed by passing feet.

On mid-elevation slopes, between 3,900 feet and 5,500 feet, cooler conditions support pygmy forests of pinyon and juniper, as well as scrub oak, interspersed with shiny-barked manzanita, narrow-and broad-leaved yucca, fragrant cliffrose, and rugged serviceberry. Above 6,000 feet, stands of ponderosa pine and Gambel oak appear, wafting vanilla and piney scents on the warm breeze. Higher up, the pines are joined by groves or quaking aspen. On the upper Kolob Plateau, the dominant vegetation is subalpine fir, whose tall, umbrella shape shrugs off deep winter snows that cover the Markagunt Plateau. The highlands are the province of secretive mountain lions, which may travel up to 100 miles, pursuing mule deer, from rim top to canyon bottom.

The cliff tops, walls, ledges, and side canyons are ideal places to observe red-tailed hawks, golden eagles, white-throated swifts, endangered peregrine falcons, and young California condors, which were bred in captivity and released in the Vermilion Cliffs in the mid-1990s. Less visible are the reintroduced bighorn sheep, which hide in side canyons and among ledges, and the 19

species of bat that drink from pools and hunt insects nightly.

Seeps, waterfalls, streams, and potholes are magnets for frogs, toads, and other amphibians that enjoy the dripping grottoes and hanging gardens next to springs. For the riparian community, though, nothing beats the North and East Forks of the Virgin River and its tributaries. Here, dense communities of Fremont cottonwood, boxelder, maple, willow, and velvet ash share the river with bank beaver, gnatcatchers, water striders, and the native warm-water fish like the endemic Virgin spinedace and flannel-mouth sucker.

HUMAN HISTORY

Human use of the Zion National Park landscape dates back to at least 6,000 B.C. Archeologists have divided this long span of human history into four cultural periods, each characterized by distinctive technological and social adaptations, that are briefly summarized here.

During the Archaic period (approximately 6000 B.C. - A.D. 500), small groups hunted game and collected wild plants, seeds, and nuts across the broad expanse of the Great Basin and western Colorado Plateau. This mobile lifeway left few traces in the archeological record, with the exception of materials recovered from dry caves and a few deeply buried sites. In these protected settings, perishable artifacts, such as baskets, cordage nets, and yucca fiber sandals, survived. The Archaic toolkits also included flaked stone knives, drills, and stemmed dart points. The dart points were hafted to wooden shafts and propelled by throwing devices called atlatls.

By about 300 B.C., some Archaic groups had begun to supplement wild foods in

their diets by cultivating small patches of corn and squash along rivers and near springs. Archeologists have labeled these groups the "Basketmakers," because of the abundance of coiled and twined baskets found in many late Archaic sites. These early experiments with horticulture reduced group mobility and increased the need for food storage. Basketmaker sites often have grass or stone-lined storage cists and shallow, partially underground dwellings, called pithouses.

Within a few centuries, small-scale gardening had intensified into the full time horticulture that typifies the Formative period (A.D. 500-1300). Two distinctive horticultural groups, the ancestral Puebloan (known by archeologists as the Virgin Anasazi) and Parowan Fremont, appear in the archeological record of Zion National Park during this period. They established year-round habitation sites (often called "pueblos, the Spanish word for "village" or "community") with pithouses, storage cists, and later, aboveground masonry room blocks. Grinding stones ("manos and metates") signal the importance of corn in the diets of both groups. Sedentary lifestyles encouraged the production of plain and painted ceramic vessels. These were used for storage, food preparation, and as trade goods across broad geographic areas. The new technology of the bow and arrow also gained widespread acceptance during the Formative period. The extent to which the ancestral Puebloans exploited wild plants and game is still unclear. Some researchers suggest that they were almost totally dependent on cultivated foods. By contrast, the Parowan Fremont may have continued to hunt and collect a broad spectrum of wild resources to supplement cultivated foods.

Ancestral Puebloan sites typically occur on river terraces along the Virgin River and its major tributaries, overlooking the fertile river bottoms where corn, squash, and other crops could be grown. There is evidence that hunting and collecting parties made forays to nearby upland areas, like the Kolob Plateau. Parowan Fremont sites are found along stream courses and near springs. They cultivated a drought and cold tolerant variety of corn (called Fremont Dent) that could be successfully grown at higher elevations. The ancestral Puebloan and Parowan Fremont appear to have interacted along cultural contact zones, such as the Kolob Plateau, during the last years of the Formative period.

Both the ancestral Puebloans and the Parowan Fremont disappear from the archeological record of southwestern Utah by about A.D. 1300. Extended droughts in the 11th and 12th centuries, interspersed with catastrophic flooding, may have made horticulture impossible in this arid region. Some researchers have suggested that the sedentary horticultural groups could not successfully compete for wild resources with the more mobile Numic language speakers (such as the Southern Paiute and Ute) who were in the region by at least A.D. 1100.

The time span between A.D. 1300 and the late 1700s has been described as the "Neo-Archaic" by some researchers, since the lifeways were reminiscent of the earlier adaptation. The Numic language speakers were the only occupants of the Zion landscape. They depended on a wide array of wild plants and animals, moving seasonally to hunt game or collect ripe seeds and nuts. This mobile lifestyle was reflected in their material possessions, which consisted of baskets, nets, and snares, as well as bows and arrows. Some, particularly the

Southern Paiute, also planted fields of corn, sunflowers, and squash to supplement their collected wild foods. These more sedentary groups made brownware vessels that were used for storage and cooking.

The Historic period begins in the late 1700s, with the exploration and settlement of southern Utah by Euro-Americans. Initial explorations by traders from New Mexico blazed the Old Spanish Trail, which followed the Virgin River for a portion of its length. During the next century, American fur trappers and government surveyors added new overland travel routes across the region. In 1872 John Wesley Powell explored the areas around Zion Canyon, as part of western surveys conducted by the U.S. Geological Survey. The early pack trails soon became well-used wagon roads, connecting Santa Fe to the California markets.

In 1847, Brigham Young led members of the Church of Jesus Christ of Latter Day Saints (Mormons) to Utah Territory, establishing settlements in the Great Salt Lake Valley.

Within a decade, Mormon pioneers were sent to settle the southern part of the territory and grow cotton in Utah's "Dixie." Towns like Shunesberg, Springdale, Grafton, Adventure, and Paradise sprang up along the upper Virgin River during the 1860s. In 1863 Issac Behunin built the first log cabin in Zion Canyon, near the location of the Zion Lodge. Soon the canyon was dotted with other homesteads, including that of William Crawford, near Oak Creek.

During the remainder of the century, the small communities and homesteads struggled to survive. Catastrophic flooding by the river, little arable land, and poor soils

made agriculture in the upper Virgin River a risky venture. Some of these settlements, including Shunesberg and Grafton, were ultimately abandoned for more favorable locations.

By the first decade of the 20th century, the scenic qualities of southern Utah, and Zion Canyon in particular, had been recognized as a potential destination for tourism. In 1909 a presidential Executive Order designated Mukuntuweap (Zion) National Monument, in Zion Canyon. The new monument was, however, virtually inaccessible to visitors, since the existing roads were in poor condition and the closest railhead a hundred miles away. The Utah State Road Commission, established in that year, began construction on a state highway system that would eventually improve access to the southern region. State officials also negotiated with the Union Pacific Railroad to develop rail and automobile links and tourism facilities in southern Utah. By the summer of 1917, touring cars could finally reach Wylie Camp, a tent camping resort that comprised the first visitor lodging in Zion Canyon.

In 1919 a congressional bill designating Zion National Park was signed into law. Visitation to the new national park increased steadily during the 1920s, particularly after the Union Pacific extended a spur rail line to Cedar City. The Utah Parks Company, a subsidiary of the Union Pacific, acquired the Wylie Camp in Zion, and offered ten day rail/bus tours to Zion, Bryce, Kaibab, and the North Rim of the Grand Canyon. Construction on the Zion Lodge complex, designed in "Rustic Style" by architect Gilbert Stanley Underwood, began in the mid-1920s. In 1930, the newly completed Zion-Mt Carmel highway allowed motorists to travel through Zion to Bryce and points east. This highway was a

great engineering feat, requiring the construction of a 5,613-foot tunnel to negotiate the vertical sandstone cliffs of Zion.

Visitor numbers at Zion National Park have continued to increase over time, necessitating the construction of trails, campgrounds, and other facilities. The economic benefits of tourism now support the small communities surrounding the park, ensuring their survival into a new millennium of human history.

DIRECTION FOR THE PLAN — PURPOSES, SIGNIFICANCE, AND MISSION GOALS OF ZION NATIONAL PARK

The purposes, significance, and mission goals of Zion National Park are three of the key elements that shaped the development of the *General Management Plan*. These elements underlie how the park is managed. The *purposes* tell why the park was aside as a unit in the national park system. The *significance* of the park addresses what makes the area unique — why it is important enough to our natural and/or cultural heritage to warrant national park designation and how it differs from other parts of the country. Zion's *mission goals* articulate the ideal future conditions the National Park Service is striving to attain. All of the alternatives and management prescriptions in this management plan should be and are consistent with and support the park's purposes, significance, and mission goals.

Based on Zion's enabling legislation, legislative history, agency management policies, and the knowledge and insights of park staff, the planning team identified the following purposes, significance statements, and mission goals for Zion National Park. The purposes of Zion National Park are to

- preserve the dynamic natural process of canyon formation as an extraordinary example of canyon erosion
- preserve and protect the scenic beauty and unique geologic features: the labyrinth of remarkable canyons, volcanic phenomena, fossiliferous deposits, brilliantly colored strata, and rare sedimentation
- preserve the archeological features that pertain to the prehistoric races of America and the ancestral Indian tribes
- preserve the entire area intact for the purpose of scientific research and the enjoyment and enlightenment of the public
- provide a variety of opportunities and a range of experiences, from solitude to high use, to assist visitors in learning about and enjoying park resources without degrading those resources

Zion National Park is significant for the following reasons:

- Zion's stunning scenery features towering, brilliantly colored cliffs and associated vegetation highlighted by a backdrop of contrasting bright, southwestern skies.
- Zion is a geologic showcase with sheer sandstone cliffs among the highest in the world.
- The Virgin River — one of the last mostly free-flowing river systems on the Colorado Plateau — is responsible for the ongoing carving of this deeply incised landscape.

- Because of its unique geographic location and variety of life zones, Zion is home to a large assemblage of plant and animal communities.
- Zion preserves evidence of human occupation from prehistoric to modern times, including American Indian sites, remnants of Mormon homesteading, and engineering and architecture related to park establishment and early tourism.

The mission goals of Zion National Park are to

- provide park visitors educational and recreational opportunities that foster an appreciation of Zion and its resources
- ensure that visitor impacts do not impair resources
- maintain the resources, including plant and animal communities, at healthy and viable levels consistent with natural processes
- manage cultural and physical resources to ensure long-term integrity
- ensure that the built environment provides for safe visitor and staff uses in a sustainable and cost-effective manner
- ensure that the organization is responsive to employee needs, recognizing the contributions of each individual
- foster mutually supportive partnerships with private and public organizations and individuals to achieve visitor use and resource protection goals

PRIMARY PLANNING ISSUES AND CONCERNS

The planning team identified a number of key issues and concerns facing Zion National Park based on discussions with park staff, interested agencies and organizations, and the general public. Many of the issues revolve around the increasing number of visitors, the resulting impacts on park resources, and the quality of the visitor experience. The *Final General Management Plan / Environmental Impact Statement* provides a framework or strategy for addressing these issues. This section summarizes the key issues and concerns of this document.

This plan will not answer specific questions about the operation of the shuttle system in Zion Canyon, such as the number and types of shuttles, frequency of shuttles, shuttle operating times, and locations of most shuttle stops. Decisions regarding these elements were presented in the *Zion Canyon Transportation System Environmental Assessment* (NPS 1997a) and the subsequent "Finding of No Significant Impact."

INCREASING VISITOR USE

Visitation to Zion has grown dramatically over the past two decades. The number of people camping in the backcountry has risen each year, from 7,807 users in 1986, to 21,002 users in 1999. The park's campgrounds are generally full to capacity during the peak months from June through September. Increased visitation is resulting in resource impacts and crowding of some backcountry trails and frontcountry areas.

While most of the park's resources are in good condition, in some areas visitors are inadvertently damaging natural and cultural resources by creating multiple social trails (i.e., unofficial trails formed by visitors).

The formation and use of these trails result in trampled vegetation, eroded soils, stirred up sediments in rivers and streams, and displaced and collected surface artifacts.

Although most visitors rate their experiences in Zion as high, they still express concern about some aspects of the visit. Some visitors feel there are too many people in some areas of the park. These visitors suggest limiting the use of the park based on established carrying capacities or other criteria. Another segment of the public wants Zion to continue to be available to all visitors and believes the way to address crowding is not through limits, but by increasing visitor facilities and access, or redistributing visitors to less used areas of the park.

About 90% of Zion is recommended for wilderness designation. The *General Management Plan* was largely shaped by this recommendation. Under NPS policy, this area must be managed as if it were established wilderness. This obligation carries with it certain expectations for visitors, such as the opportunity to experience solitude and quiet. But these opportunities cannot always be met in some areas of the backcountry due to the behavior and number of other visitors.

The National Park Service must determine the conditions (i.e., resource conditions, visitor experiences) for which Zion National Park should be managed. If park managers allow use levels to increase further, the potential for resource damage will increase and opportunities for quality experiences, such as solitude, will likely decline. If park managers regulate or restrict use levels, resources could be better protected, but visitors would have less freedom to go where and when they choose. If park managers

limit use in one area and displace visitors there, other areas within or outside the park could receive higher use levels and resource impacts.

FUTURE OF RESEARCH NATURAL AREAS (RNAS)

Research natural areas are areas administratively designated by federal land management agencies for research and educational purposes and/or to maintain biological diversity. Research natural areas typically preserve examples of ecological communities that have been little disturbed in the past, and in which current natural processes are allowed to continue with minimal human intervention. Uses in research natural areas are restricted to research that samples but does not alter the existing condition, and educational activities that do not detract from the areas' research values. Federal land management agencies, including the National Park Service, have established a national network of research natural areas.

Zion National Park currently has three areas designated as research natural areas: Bighorn (8,313 acres), West Rim-Phantom Valley (22,409 acres), and Kolob Mesas (279 acres). Bighorn and West Rim-Phantom Valley were designated as research natural areas in 1942, while Kolob Mesas was designated as a research natural area in 1966. Parunuweap Canyon also has been considered for designation. Park staff raised questions regarding the rationale for the three existing park research natural areas, which have not been consistently managed with the intent of the designation and NPS guidelines. Although recreational use is not generally allowed in research natural areas nationally, most of the currently designated Zion research natural areas are open to recreational use.

Park managers must determine whether the existing research natural areas meet park resource management goals or whether management of better defined research natural areas is needed. If these areas were managed as they were intended under NPS policy, then potential impacts on many of the park's natural and cultural resources would be avoided, but much of the park would be closed to the public. If park managers establish a management designation that permits certain uses in research natural areas, potential impacts may result, and questions concerning how Zion's research natural areas relate to the national system may arise.

PUBLIC USE OF PARUNUWEAP CANYON

In 1992, park managers closed Parunuweap Canyon for recreational use, pending completion of this planning effort. There are differing opinions on whether or not this area should be opened to the public. Some people want the canyon to be opened for unlimited recreational use, others prefer the canyon to be opened only for strictly regulated recreational use. Still others support keeping the canyon permanently closed to recreational use to prevent impacts on sensitive cultural and natural resources.

Park managers must determine whether or not to open Parunuweap Canyon to the public. If the canyon remains closed, the special resources in this area would be protected, but visitors would not be able to access this area. If this area was open to the public, impacts on the canyon's natural and cultural resources would increase. If the canyon was open to limited public use, park managers must answer questions regarding how many people should be allowed into the area, at what times, and at what points. Some people who want to see the area may not be able to do so at the time of their choosing.

FUTURE OF ZION CANYON LODGE

The Zion Canyon Lodge operation has been a traditional use in Zion for more than 80 years. It has enabled many visitors to stay in the park by providing overnight accommodations and food services. Although the lodge is the only place offering these visitor services within the park, other facilities and services are available in Springdale and nearby communities. Some people believe the lodge should continue to operate, arguing it is a special part of Zion's history, and offers a unique visitor experience and services that add to visitors' enjoyment of the park. Others argue that the lodge is inappropriate and unnecessary in a national park, that it encourages crowding and resource impacts. These people believe the lodge should be closed or converted to another more appropriate use.

The National Park Service must determine whether or not to continue the current operation of the Zion Canyon Lodge. If the lodge remains open as it is now, many people would continue to gain a special experience staying overnight in the park. However, resource impacts also would continue in the area, and the lodge would continue to take away potential customers from businesses in Springdale. If the lodge was closed, some resource impacts would decrease in the area and businesses in Springdale could benefit. However, a special visitor experience now offered in the park would be eliminated and adversely affect the lodge employees and the employer.

WILD AND SCENIC RIVER DESIGNATION

Both the public and park staff expressed concerns about maintaining the free-flowing condition and other outstanding values of rivers and streams in and adjacent to Zion. Other citizens are concerned that designating

drainages in and adjacent to Zion as wild and scenic rivers would impinge on visitor activities and freedoms. The Wild and Scenic Rivers Act requires federal land managers to consider potential national wild, scenic, and recreational rivers in planning for water and land resources.

The National Park Service and Bureau of Land Management must determine whether or not to recommend that the drainages in and adjacent to Zion be designated as part of the wild and scenic rivers system. Making such a designation would provide additional protection to the park's drainages and could attract additional visitors to the park. On the other hand, if increased use occurs, the designation could result in additional resource impacts in the drainages.

MANAGEMENT OF THE NORTH FORK OF THE VIRGIN RIVER

Recreational use of the North Fork of the Virgin River in Zion Canyon has dramatically increased in recent years. Visitors kayak the river in the spring, and swim and wade in the river during the summer. Concerned citizens have raised questions regarding how the Park Service should manage the North Fork in the future. These questions include:

- What types of recreational uses are appropriate for the river environment and the visitor experience?
- Should the upper portion of the North Fork in Zion Canyon continue to be channelized or should it be restored to more natural conditions?
- If part of the river is restored, what effect will it have on the Zion Lodge, the road, and use of the canyon?

Park managers must determine the appropriate uses for the North Fork of the Virgin River and whether or not to restore

the river channel and its floodplain. Limiting certain uses would reduce or eliminate resource and visitor impacts, but this would also reduce the diversity of experiences offered in the park.

Restoring part of the river's floodplain would be consistent with the park purpose to preserve the dynamic processes that formed the canyon. The riparian forest community along channelized reaches of the river has lost viability as evidenced by the even-aged, decadent overstory with no recruitment of new trees. Similar occurrences have been documented throughout the West where there has been a loss of connectivity between rivers and floodplains due to channelization, channel entrenchment, or control of floods downstream of reservoirs. To reproduce, most riparian tree and shrub species need the disturbance and watering provided by floods and channel migration. Historic photographs of Zion Canyon, and comparisons with similar river channels elsewhere, show a much more active channel and greater use of the floodplain. Surveys in Zion have shown that Virgin spinedace populations are much higher where the river has not been channelized than where it has.

River restoration would reestablish a natural morphology and riverine ecology and maintain or restore habitat for aquatic and floodplain species. The level of restoration would determine the extent of impacts on the park road, footbridges, and lodge; the level of visitation in Zion Canyon; and the degree to which visitors faced safety hazards when the river floods.

Although the *Final General Management Plan / Environmental Impact Statement* focuses on what types of recreational uses

are appropriate for the river and whether or not the river floodplain should be restored, this plan will not answer detailed questions about the management of the river. Specifically, this plan will not answer questions regarding appropriate use levels, use management techniques, and the degree of restoration of the floodplain. A future detailed river management plan will address these questions.

DEVELOPMENT AND USES ADJACENT TO THE PARK

The population in the region around Zion National Park has been rapidly growing. As more people move into the area, residential and second-home development has been increasing on lands adjacent to the park. There most likely will be more development in the future, particularly near the park's south entrance, the Kolob Canyons entrance, and on land east of the park. Private developments and management practices could affect the scenic views from the park, the night sky, ambient sound levels, opportunities for solitude, soil erosion, the composition of native plant and animal communities, and wildlife migration/habitat corridors. They can also restrict or close off visitor and staff access to parts of the park.

Park managers must determine how to manage park resources in light of the development that is occurring, or potentially could occur, adjacent to the park. If no actions were taken, park resources and the visitor experience would most likely degrade in parts of the park. Current access could be restricted or eliminated in some parts of the park.

OTHER ISSUES TO BE ADDRESSED IN FUTURE PLANS

Several other issues are of concern to park managers and visitors at Zion National Park, which are summarized below. The *General Management Plan* provides some directions and lays the groundwork for addressing these issues. However, future implementation plans will provide specific directions and actions that deal with these issues. Opportunities for public input will be provided in developing these implementation plans.

CARRYING CAPACITY

Within the next five years carrying capacity studies will be completed for the park. These studies will serve as components for future plans such as the wilderness management plan. The 1978 Parks and Recreation Act requires parks to address carrying capacity, and it is essential in order to protect resources and provide a quality visitor experience. While the *General Management Plan* addresses carrying capacity qualitatively, a more scientific approach is needed to determine appropriate resource and visitor experience conditions. A VERP process or similar one will be used to collect additional data on visitor experiences and resource conditions, establish indicators and standards for each zone, and set up a monitoring program to determine whether conditions are acceptable or unacceptable. This process will allow management to take action to ensure resources and visitor experiences do not deteriorate to an unacceptable level. In the meantime, interim carrying capacities for the primitive and pristine zones have been established based on current levels of use and resource protection needs.

WILDERNESS MANAGEMENT

About 90% of the park is recommended wilderness and is managed as wilderness. It is essential that these areas be managed to protect the wilderness characteristics and values, both for the resource value itself as well as for the visitor's wilderness experience. As backcountry use is expanding dramatically, it is increasingly difficult to protect resources and manage for solitude and primitive recreation. A comprehensive plan is needed to address wilderness management. The park staff will complete a wilderness management plan within five years. This plan will follow NPS policy, including the minimum requirement process, to determine appropriate uses and levels of use in wilderness. In addition to carrying capacity, the wilderness management plan will specifically address climbing/canyoneering, river recreation, and the potential for commercial guiding (see each description below).

CLIMBING AND CANYONEERING

Climbing and canyoneering are two activities that have dramatically risen in popularity in recent years. These activities have the potential to adversely affect park resources, defacing rock faces, disturbing cultural resources, disturbing sensitive species (e.g., peregrine falcons, spotted owls, and desert bighorn sheep), trampling vegetation, and forming social trails. Climbing/canyoneering will be addressed in the wilderness management plan.

RIVER RECREATION

Concerns have also been expressed about the impacts of river recreation. Visitors kayak

the North Fork of the Virgin River in the spring, and swim, wade, and hike portions of the river in the summer. There are concerns about the impacts of these activities on water quality (e.g., increased sedimentation and turbidity, spread of human waste), soil erosion, sensitive species, and the disturbance of other visitors, particularly in the Zion Narrows.

Concerns regarding the use and management of the North Fork will be addressed in a river management plan.

NATURAL SOUNDS, NOISE, AND AIR TOURS

Natural sounds (e.g., water flowing, wind blowing through trees, birds calling) are a resource that contribute to the visitor experience in all parts of the park. Natural sounds predominate in most of Zion; however, mechanical and other human-created sounds can be a problem in some areas. Noise from aircraft can be heard throughout the park. In the frontcountry (Zion Canyon), some visitors complain that the sounds of automobiles and buses, generators, motorized equipment, and other people at times interfere with the natural sounds of the park. The intrusion of human-generated noise in the backcountry may negatively affect visitors' experiences. In particular, there is concern that the noise generated by an increase in low-flying aircraft or commercial jets would impair visitors' ability to hear natural sounds and detract from the experience of solitude. Human-generated noise can also affect the behavior of some animals, depending on the type, frequency, and level of noise, especially during sensitive periods such as the breeding season.

Park managers must determine what activities produce, or could produce, unacceptable noise levels in the park

consistent with management zoning. If sources of man-made noise were limited or prohibited, natural ambient sound levels would be maintained, and potentially negative impacts park resources on visitors' experiences may be avoided. But this action also would reduce the range of scenic viewing opportunities.

Questions pertaining to air tours will be addressed in a future air tour management plan while other noise issues will be covered in a soundscape preservation and noise management plan.

GUIDE SERVICES

Currently, guided hiking or climbing activities in the park are not permitted. NPS staff-led activities include visitor center and evening programs, and ranger-led hikes. Some visitors and guiding organizations have requested that guided activities be allowed in Zion, believing these operations would enhance many visitors' experience, reduce potential impacts, and help prevent accidents. Other people believe that guided activities should not be permitted, arguing that these operations would increase use in already overcrowded areas and displace or impact nonguided users. Many questions exist regarding what guided services (e.g., guided hiking, bicycling, climbing) are appropriate in the park. Other questions relate to when and where the services should take place and to what extent.

The wilderness management plan and carrying capacity studies will determine whether or not to permit guided activities in Zion. Permitting guided services would have both positive and negative impacts, as noted above.

AIR QUALITY

Long-range transport of air pollutants from industrial sources and large urbanized areas, increased numbers of visitors, and increased development in the region as well as near the park boundary have the potential to adversely affect Zion's air quality. Although the park's shuttle system has helped to reduce air pollution in Zion Canyon, increased vehicular traffic in Springdale and other parts of the park could increase air pollution. Smoke from campfires in the summer and from residences with wood stoves in the winter is sometimes evident in the canyon in early mornings and evenings. Local trash burns, prescribed burns, and administrative maintenance burns can also produce temporary reductions in air quality.

Air quality issues will be addressed as part of the park's resource management plan.

WATER QUALITY AND QUANTITY

A number of water resource issues exist in Zion, including water quality and flood hazards. Impacts on water quality have occurred in parts of the park due to recreational use and livestock grazing outside the park. Changes in water quality and water flows could have major effects on park resources and visitors. A parkwide water resources management plan will address these issues and other scientific and legal requirements to promote understanding and management of park waters.

NIGHT SKY

Viewing of the night sky is an important aspect of visitors' experiences in Zion National Park. Outdoor lighting in developed areas of the park and in surrounding communities can negatively affect the night sky. As neighboring communities continue to grow, the potential for light pollution affecting the night sky visibility will increase. Actions and strategies will be developed to mitigate or eliminate impacts of artificial lights as part of the resource management plan.

CULTURAL RESOURCES

Unmanaged visitor use at archeological or historic period sites can impact the integrity and scientific value of these sites. The nature and extent of these impacts can be difficult to assess, since baseline data on site conditions are often unavailable or incomplete. In recent years, park staff has implemented site monitoring and site condition assessment programs to aid in developing long-term protective strategies for significant sites that could be impacted by visitors. Park managers must maintain historic buildings on an ongoing basis (i.e., cyclic maintenance and rehabilitation) to ensure that conditions are suitable for national register eligibility.

Cultural resources management will be addressed in the park's resource management plan.

PARK POLICIES AND PRACTICES

A number of federal laws and NPS policies and practices guide the management of Zion National Park. Appendix B describes some of these key federal laws, such as the NPS Organic Act, which underpins much of what can and cannot be permitted in national parks and which distinguishes national parks from other public lands. This section focuses on park policies and standard park practices that affect the management of Zion. These policies and practices guide the actions taken by park staff on such topics as natural and cultural resource management, use of recommended wilderness areas, development of park facilities, and visitor use management.

These policies and practices would continue to guide park managers under all of the alternatives described in "Alternatives, Including the Proposed Action." Park staff would continue to implement NPS policies and goals, as identified in *NPS Management Policies* (2001) and the *NPS Strategic Plan* (1997c); several existing formal agreements; and many standard park practices, as described in the "Zion National Park Compendium" (NPS n.d.).

The ongoing management policies and practices of Zion National Park are described below. For each topic discussed, there is a general statement that describes the National Park Service's desired future condition or goal for Zion. The general strategies or actions taken (or that will be taken) by park staff to achieve the desired conditions are also discussed. Some of the strategies described below are not currently being implemented, but the strategies are consistent with NPS policy, are not believed to be controversial, and would require no additional analysis and documentation under the National Environmental Policy Act.

The alternatives in this plan/EIS include additional desired conditions and strategies besides the ongoing park policies and practices described below. The combination of the ongoing park policies and practices in this part and the strategies specific to the alternative that is selected for implementation will form the complete *General Management Plan* for Zion National Park.

ECOSYSTEM MANAGEMENT

Zion National Park lies within an extensive landscape of human, biological, and physical dimensions. Park resources and their management are affected by natural processes and social circumstances, which often extend beyond park boundaries. Park visitors, local culture and traditions, adjacent land management, and economic considerations all affect park recreational and wilderness values, as well as the conservation of cultural and natural resources. For example, although the park staff manages a small portion of the upper Virgin River watershed, water quality in the park may depend upon actions taken upstream of the park on over 700,000 acres.

The park also is in a rapidly developing region of the United States. With the predicted population growth for Washington, Iron, and Kane Counties, lands adjacent to the park will be subject to increased development — a trend already apparent. Increased use of recreational lands and facilities, greater consumption of water and other resources, and fragmenting of sensitive species habitat will likely result. Because the park is part of this greater ecosystem, should this development impact resources and alter ecological processes, the ability of the park to sustain natural and cultural resources could be compromised.

In the past many park units were managed in a way that did not adapt to natural or social change, or consider influences beyond park boundaries. Managing for a static environment in the human or natural dimension will not provide the means to meet the needs of future generations nor accommodate the change inherent to, and resulting from, natural processes.

In terms of biological, geological, and hydrologic resources, the management of Zion National Park's natural resources has begun to change from custodial management to that of allowing natural processes to shape the landscape, while also taking restoration actions to conserve native biological communities and species. For example, the condition of vegetation communities has declined on park and adjacent lands since the settlement period from overuse, weed infestations, and exclusion of natural fires. To reinstitute the natural fire process, park management of vegetation now includes the use of both management-ignited and naturally ignited fire under closely managed conditions. In concert with fire management, weed control and revegetation, using native plants as active restoration tools, are used to restore natural vegetation. To be most effective, application of these restoration activities must be conducted in concert with adjacent land managers because vegetation communities do not conform to political boundaries.

- *Desired Conditions:* The Park Service demonstrates leadership in resource stewardship and conservation of ecosystem values within and outside the park. Zion National Park is managed from an ecosystem perspective, where internal and external factors affecting visitor use, environmental quality, and resource stewardship goals are considered at a scale appropriate to their impact on affected resources. Park resources and visitors are managed considering the ecological and social conditions of the park and surround-

ing area. Park managers adapt to changing ecological and social conditions within and external to the park and continue as partners in regional planning and land management.

- *Strategies:* Park staff would continue to participate in and encourage ongoing partnerships with local, state, and federal agencies and organizations in programs that have importance within and beyond park boundaries. Partnerships important to the long-term viability of critical natural and cultural resources include:
 - 1) Interagency Conservation Agreement for the Virgin Spinedace: provides for habitat improvement and population protection for the spinedace
 - 2) Virgin River Resource Management and Recovery Program: provides for conservation of riverine resources (specifically seven species of concern) throughout the Virgin River drainage, through habitat management, improved water quality and quantity, in-stream flow, floodplain protection, and other means
 - 3) Zion National Park Water Rights Settlement Agreement: protects stream and groundwater resources within and adjacent to the park and provides for federal reserved water rights (pending final adjudication) for the park
 - 4) Grafton Heritage Partnership Project: restores/stabilizes the extant structures and interpretation of the historic pioneer-era settlement of Grafton, as well as river channel restoration
 - 5) River channel and floodplain restoration of the North Fork of the Virgin River: restoration of natural floodplain and riverine processes in stretches of the river within and below the park.

Central to ecosystem management is long-term monitoring of the change in condition of cultural and natural resources and related human influences. Without a planned monitoring program, improvement or degradation of resources and visitor experience cannot be determined with any certainty. To protect, restore, and enhance park resources and to sustain visitor use and enjoyment within the park and the related landscape, park managers will

- initiate long-term monitoring of resources and visitor use, including use of the VERP process as appropriate
- promote park-sponsored research to increase the understanding of park resources, natural processes, and human interactions with the environment
- institute science-based decision-making, incorporating the results of resource monitoring and research into all aspects of park operations
- identify lands external to the park where ecological processes, natural and cultural resources, and human use affect park resources or are closely related to park resource management considerations; initiate joint management actions, agreements, or partnerships to promote resource conservation
- provide vigorous education and outreach programs to highlight conservation and management issues facing the park and related lands, and develop constituencies to assist in their resolution

RELATIONS WITH PRIVATE AND PUBLIC ORGANIZATIONS, ADJACENT LANDOWNERS, AND GOVERNMENTAL AGENCIES

As noted above, Zion National Park is not an island — the park is part of a greater area, socially, politically, ecologically, and historically. The National Park Service must consider how its actions in Zion affect the surrounding environment and society. For instance, management of the park influences local economies through tourism expenditures, as well as the goods and services purchased by the Park Service to support park operations.

- *Desired Conditions:* The National Park Service manages Zion National Park holistically as part of a greater ecological, social, economic, and cultural system. Good relations are maintained with adjacent landowners, surrounding communities, and private and public groups that affect, and are affected by, the park. Zion is managed proactively to resolve external issues and concerns and ensure park values are not compromised.
- *Strategies:* Park staff would continue to establish and foster partnerships with public and private organizations to achieve the purposes and mission of the park. Partnerships would be sought for resource protection, research, education, and visitor enjoyment purposes.

To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, park staff would keep landowners, land managers, local governments, and the public informed about park management activities. Periodic consultations would occur with landowners and communities who were affected by, or potentially affected by park visitors and management actions. Park staff would respond promptly to conflicts that arose over their activities, visitor access, and

proposed activities and developments on adjacent lands that could affect Zion. Park managers would seek agreements with landowners to encourage their lands to be managed in a manner compatible with park purposes. Park staff also would seek ways to provide landowners with technical and management assistance to address issues of mutual interest.

The National Park Service would work closely with local, state, federal agencies, and tribal governments whose programs affect, or are affected by, activities in Zion. The Park Service would continue to be an active member of the Southwest Utah Planning Authorities Council (SUPAC). It also would continue to coordinate with the Five County Associations of Governments, and with other local, state, and federal agencies. In particular, park managers would maintain a close working relationship with the Bureau of Land Management, whose lands abut much of the park, to meet mutual management needs. Park managers also would pursue cooperative regional planning whenever possible to integrate the park into issues of regional concern.

GOVERNMENT TO GOVERNMENT RELATIONS BETWEEN AMERICAN INDIAN TRIBES AND ZION NATIONAL PARK

Several Southern Paiute tribes and bands view Zion National Park as part of their traditional homeland. These tribes and bands include the Paiute Indian Tribe of Utah (which includes the Kanosh, Shivwits, Koosharem, Indian Peaks and Cedar Bands), the Kaibab Band of Paiute Indians, the Moapa Paiute Indian Tribe, and the San Juan Paiute Indian Tribe. The Hopi Tribe and other Puebloan groups also have expressed their close affiliation with Zion.

The National Park Service has developed several park policies based on legal mandates, such as the National Historic Preservation Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, and the American Indian Religious Freedom Act. The Park Service has written a formal park policy that exempts Southern Paiute tribal members from paying fees if they enter the park for nonrecreational activities (i.e., traditional religious, ceremonial, medicinal, or other customary activities). The Park Service and tribal governments of the Southern Paiute have also jointly developed a memorandum of understanding that allows, under prescribed conditions, tribal members to gather plants found within the park that are used for traditional and customary purposes.

- *Desired Conditions:* The National Park Service and tribes culturally affiliated with Zion maintain positive, productive, government-to-government relationships. Park managers and staff respect the viewpoints and needs of the tribes, continue to promptly address conflicts that occur, and consider American Indian values in park management and operation.
- *Strategies:* The National Park Service would continue to cooperate with tribes in conducting ethnographic studies to better understand which tribes are culturally affiliated with the park and identify culturally significant resources.

Regular consultations would occur with affiliated tribes to continue to improve communications and resolve any problems or misunderstandings.

Park managers would continue to encourage the employment of American Indians on park staff to improve communications and working relationships, and encourage cultural diversity in the workplace.

Culturally affiliated tribal values would be considered in efforts to improve overall management and park interpretation.

A joint monitoring program would be implemented to monitor plant-gathering sites for potential impacts, as called for in the memorandum of understanding with the Southern Paiute.

NATURAL RESOURCES (GENERAL)

Protection, study, and management of the park's natural resources and processes is essential for achieving the park's purposes and mission. The "Resource Management Plan" (NPS 1994a) provides details on the strategies and actions to address the park's most important resource management problems and research needs.

- *Desired Conditions:* Zion retains its ecological integrity, including its natural resources and processes. The natural features of the park, including the natural sound environment remain unimpaired. The park continues to be a dynamic, biodiverse environment. Park visitors and staff recognize and understand the value of the park's natural resources. Park staff uses the best available scientific information and technology to manage the park's natural resources. Park managers ensure that laboratory facilities are available to meet the needs of park staff and independent scientists engaged in fundamental physical, biological, and cultural studies and analyses. Zion is recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use.
- *General Strategies:* Park staff and other scientists would continue to inventory park resources to quantify, locate, and document biotic and abiotic resources in the park and to assess their status and trends.

Park managers would encourage and support basic and applied research directly through various partnerships and agreements to enhance the understanding of park resources and processes, or to answer specific management questions.

Park staff and other scientists would continue the long-term systematic monitoring of resources and processes to discern natural and anthropogenically induced trends, document changes in species or communities, evaluate the effectiveness of management actions taken to protect and restore resources, and to mitigate impacts on resources.

The park staff would continue to expand the data management system, including a geographic information system (GIS), a research data base, and a literature data base, for analyzing, modeling, predicting, and testing trends in resource conditions.

Park staff would apply ecological principles to ensure that natural resources were maintained and not impaired. They would manage fire to maintain and/or restore ecosystem integrity and use integrated pest management procedures when necessary to control nonnative organisms or other pests. Habitats for threatened and endangered species would also be conserved and restored.

Park staff would apply mitigation techniques to minimize the impacts of construction and other activities on park resources (see the text box). Facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible.

Park managers would restore disturbed lands as much as possible and determine on a site-by-site basis whether passive or active restoration was necessary. Park staff would carry out active restoration of

previously or newly disturbed areas using native genetic materials to regain maximum habitat value. Should facilities be removed, the disturbed lands would be rehabilitated to restore natural topography and soils, and revegetate the areas with native species. Under some circumstances, primarily in frontcountry developed areas, it may be appropriate and within policy to use nonnative plants in restoration efforts. Additionally, certain exotic plant species may be used to control other, more noxious and invasive exotic plant species. These practices are intended for short-term use only, to achieve a long-term overall goal of native plant community integrity.

Park managers would continue to regularly update the park's resource management plan and prioritize actions needed to protect, manage, and study park resources.

AIR QUALITY

Zion National Park is designated a class I area under the Clean Air Act. This designation allows air quality characteristics, including visibility, to be degraded the least, compared to other Clean Air Act designations.

- **Desired Conditions:** Zion's class I air quality is maintained or enhanced with no significant degradation. Nearly unimpaired views of the landscape both within and outside the park are present. Scenic views, which are integral to the visitor experience and have been identified in the park as per the Clean Air Act, are substantially unimpaired. For example, Mt. Trumbull and the Kaibab Plateau, both over 50 miles away in northern Arizona, can usually be seen from Lava Point. Park staff carry out prescribed fires to replicate ecological conditions and/or reduce dangerous fuel loading, in a manner that minimizes local effects to visibility from smoke production.

Natural Resource Mitigation Measures

Park staff would continue to apply the following measures to avoid or minimize the impacts on sensitive natural resources:

- enforce trail closures during the Mexican spotted owl breeding/nesting period (March 1 - August 31) for side canyons off of the main Zion Canyon where the owls typically are found
- prohibit the climbing of cliff faces that support peregrine falcon aeries during breeding and nesting periods (approximately February through July); direct air traffic away from these nesting areas
- limit damage or loss of vegetation and associated species (including Zion snails) in hanging gardens through visitor education and the use of delineated trails, barriers, and signs
- employ erosion control measures or place barriers to control potential impacts on rare plants from trail erosion or social trailing
- employ a variety of techniques, including visitor education programs, restrictions on visitor activities, and ranger patrols, to reduce impacts on wildlife during sensitive times
- use designated river access/crossing points, barriers, and closures to prevent trampling and loss of riparian vegetation
- use interpretive displays and programs, ranger patrols, and regulations on use levels to minimize water pollution.

- **Strategies:** The National Park Service would continue to work with appropriate state and federal government agencies, industries, nearby communities, land managers, the Southwest Utah Planning Authorities Council (SUPAC), the Utah Division of Air Quality, and the Western Regional Air Partnership to maintain park and regional air quality.

Park staff and other scientists would inventory and monitor air quality in the park to gain baseline data and to measure

any significant changes (improvement or deterioration) to Zion's airshed. This would include a complete inventory of in-park emission sources, as well as those in the immediate vicinity of the park.

The Park Service would review, comment on, and recommend actions to minimize or reduce emissions from sources being proposed within 64 miles (100 kilometers) of Zion.

Park managers also would attempt to minimize the effects of in-park pollution sources on air quality. For example, emissions from burning wood in campgrounds and residences may be reduced by establishing nonburn days or by banning wood-burning stoves.

NIGHT SKY

NPS policy recognizes that Zion's night sky is a feature that significantly contributes to the visitor experience. The policy further states that the Park Service will seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting will be limited to meeting basic safety requirements and will be shielded when possible.

- **Desired Conditions:** Excellent opportunities to view the night sky are available. Artificial light sources both within and outside the park do not impair night sky viewing opportunities.
- **Strategies:** Park staff would continue to work with local communities to encourage protection of the night sky and would evaluate impacts on the night sky caused by facilities within Zion National Park. To the extent possible, the staff would work within a regional context to protect night sky quality.

If park staff determine that light sources within the park affect views of the night sky, they would study alternatives to existing lighting sources, such as shielding lights, changing lamp types, or eliminating unnecessary sources.

WATER QUANTITY AND QUALITY

Water is a key resource in Zion National Park, shaping the landscape and affecting plants, animals, and visitor use. Nearby communities and landowners also rely on the water that flows into and out of the park. River flow in Zion is currently substantially natural and free flowing. It is protected by federal reserved water rights recognized under the 1996 Zion National Park Water Rights Settlement Agreement between the United States, the State of Utah, the Washington County Water Conservancy District, and Kane County Water Conservancy District. The Agreement identified state appropriative rights and federal reserved water rights to help ensure that the National Park Service maintains groundwater, stream flows, and spring discharges within the park. While the Agreement allows for some potential future development of water above the park, the agreement recognizes the United States' reserved rights to "all water underlying, originating within or flowing through Zion National Park ... that was appropriated as of the dates of reservation of the lands now within the boundaries of the park, which waters are to remain in a *free flowing condition*." [emphasis added] The rights comprise "those waters in the Virgin River Basin," and include all sources of surface and groundwater.

- **Desired Conditions:** The National Park Service fully complies with the Zion National Park Water Rights Settlement Agreement to support park resource, visitor, and administrative uses, and the rights of other water users. Flows in the springs, rivers, and tributaries, including

floods, are substantially natural. All water withdrawals and appropriations are limited to authorized amounts. Zion's water quality continues to reflect natural conditions and supports administrative and recreational uses, and adjacent communities.

- **Strategies:** With regard to water flows, the National Park Service would work cooperatively with the Utah Department of Natural Resources, Washington County Water Conservancy District, and Kane County Water Conservancy District to implement the Zion National Park Water Rights Settlement Agreement.

Park staff would strive to conserve water in all park operations. Examples of actions that could be taken include replacing irrigation ditches with pipes, reducing irrigated landscapes, and installing low flow fixtures such as toilets and showers.

Park personnel would document and monitor current water consumption in the park and monitor stream flows. Park managers would review all future projects for compliance with the provisions of the water rights agreement.

Visitor interpretive and education efforts would emphasize the hazards from flash flooding that exist in the park and appropriate responses when flooding occurs. Park staff would educate visitors in techniques to prevent water pollution and safely collect and treat drinking water from natural sources.

Park personnel would develop a program to manage human waste in all areas, particularly in riparian or riverine situations. This program may involve visitors carrying their own wastes out from certain areas.

Park managers also would work with adjacent landowners and the Utah Department of Natural Resources to

prevent water pollution and minimize the risk of water-borne diseases stemming from livestock and other sources. Park managers would also participate in state or national water quality remediation and watershed planning programs.

A monitoring program would be established to regularly measure water quality and quantity, including physical, chemical, and biological properties.

NATURAL SOUNDS

NPS *Management Policies* require park managers to strive to preserve the natural soundscape (natural quiet) associated with the physical and biological resources (for example, the sounds of the wind in the trees). The concept of natural quiet was further defined in the *Report on Effects of Aircraft Overflights on the National Park System* (NPS 1995b):

What is *natural quiet*? Parks and wildernesses offer a variety of unique, pristine sounds not found in most urban or suburban environments. They also offer a complete absence of sounds that are found in such environments. Together, these two conditions provide a very special dimension to a park experience — quiet itself. In the absence of any discernible source of sound (especially manmade), quiet is an important element of the feeling of solitude. Quiet also affords visitors an opportunity to hear faint or very distant sounds, such as animal activity and waterfalls. Such an experience provides an important perspective on the vastness of the environment in which the visitor is located, often beyond the visual boundaries determined by trees, terrain, and the like. In considering natural quiet as a resource, the ability to clearly hear the delicate and quieter intermittent sounds of nature, the ability to experi-

ence interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time is what natural quiet is all about.

Aircraft flights over the park for sightseeing, photography, or filming purposes can adversely affect the natural soundscape. The potential exists for increases in air tours and associated noise impacts in the park. Land-based sources, such as motor vehicles, can also affect natural sounds.

- **Desired Conditions:** Natural sounds predominate in Zion. Visitors have opportunities throughout most of the park to experience natural sounds in an unimpaired condition. The sounds of civilization are generally confined to developed areas.
- **Strategies:** Park managers would continue to follow several policies and practices to minimize noise both from land and air sources.

With the passage of Public Law 106-181 (National Parks Air Tour Management Act of 2000), the park staff would develop an air tour management plan to provide guidance in managing this activity. The plan would conform to the above legislation.

As provided in the legislation, the Federal Aviation Administration (FAA) would grant interim operating authority for air tour operators to continue to operate as they have in the past, pending completion of an air tour management plan. If all parties, including the park superintendent, agree, an interim operating authority could be modified to further protect park resources, values, and/or visitor experiences.

Park managers would work with the FAA, tour operators, and all other interested parties in developing the air tour management plan. This plan would determine if commercial air tours would be appropriate

for the park, and if so, under what conditions (e.g., if air tours are appropriate in some or all of the park, the plan could establish conditions such as routes, altitudes, times of day, maximum number of flights per unit of time, etc.).

The National Park Service would continue to work with the Federal Aviation Administration (FAA), tour operators, commercial businesses, and general aviation interests to minimize noise and visual impacts of aviation to the park. Aircraft would be encouraged to fly outside the park, especially for those flights where the presence of the park was incidental to the purpose of the flight (i.e., transit between two points). Actions that may be considered for encouraging pilots to fly outside park boundaries include identifying the park on route maps as a noise-sensitive area, educating pilots about the reasons for keeping a distance from the park, and encouraging pilots to fly in compliance with FAA regulations and advisory guidance, in a manner that minimizes noise and other impacts.

The National Park Service would work with the Department of Defense to develop a process to address the occasional problems that arise from military flights over Zion.

Park managers would follow several strategies to control existing and potential land-based noise sources:

- continue operating the shuttle system in Zion Canyon and eventually prohibit tour buses, which will reduce noise levels and eliminate the greatest source of noise in Zion Canyon
- continue to require bus tour companies in Zion to comply with regulations that reduce noise levels (e.g., turning off engines when buses are parked)
- encourage visitors to avoid the use of generators, thus reducing related noise

(Electric hookups in the Watchman campground should eliminate most of the need for generators.)

- maintain the existing quiet hours in campgrounds
- continue to enforce existing noise policies in the backcountry

Park managers would minimize noise generated by park management activities by strictly regulating NPS and concession administrative use of noise-producing machinery such as aircraft and motorized equipment. Noise would be a consideration when procuring and using park equipment. In the recommended wilderness area, the use of motorized equipment would conform to the requirements of the Wilderness Act, "minimum requirements procedures," and related NPS policies (NPS *Director's Order 41*). Park managers also would prepare a soundscape preservation and noise management plan to provide guidance for managing all noise sources in the park, including buses, generators, NPS equipment, other aircraft, and external sources.

CULTURAL RESOURCES (GENERAL)

Zion's cultural resources, including its prehistoric, historic, and ethnographic resources, are an integral part of the park landscape. Protection of these resources is essential for understanding peoples' past, present, and future relationship with the park environment and expressions of America's cultural heritage. The Zion "Resource Management Plan" (NPS 1994a) provides details on the strategies and actions to address the park's most important cultural resource problems and research needs.

- *Desired Conditions:* Zion's cultural resources are protected and the integrity of the park's cultural resources is preserved unimpaired. Park visitors and employees recognize and understand the value of the

Cultural Resource Mitigation Measures

Park staff would continue to apply the following measures to ensure that impacts on sensitive cultural resources were avoided or minimized:

- consult a Utah state historical preservation officer and undertake an archeological survey, to determine the extent and significance of archeological resources in areas that were not surveyed, for actions that could involve ground disturbance or affect structures and/or landscapes that were either on or eligible for the National Register of Historic Places
- where possible, site projects and facilities in previously disturbed or developed locations
- whenever possible, modify project design features to avoid effects to national register eligible or listed properties
- ensure that archeological monitors were present during all construction activities that could impact subsurface cultural deposits
- add signs and physical barriers to protect sites listed on the national register (or were eligible for listing) from visitor related impacts.
- focus public education initiatives on class I and class II sites, as identified under the park's archeological site disclosure policy

park's cultural resources. Zion is recognized and valued as an example of resource stewardship, conservation, education, and public use.

- *General Strategies:* The National Park Service would support basic and applied research, directly and through various partnerships and agreements, to enhance the understanding of resources and processes or to solve specific management questions.

Park staff would use the best available scientific information and technology for

making decisions on and managing the park's cultural resources.

Park staff and scientists would continue to collect information to fill gaps in the knowledge and understanding of Zion's cultural resources, to assess their status and trends and more effectively protect and manage the resources.

The National Park Service also would continue long-term monitoring of archeological sites to measure the deterioration from natural and human sources and to evaluate the effectiveness of management actions to protect resources and mitigate impacts.

To analyze, model, predict, and test trends in resource conditions, park managers would continue to use and expand a data management system, including a geographic information system (GIS).

To provide the public and park staff with optimum interpretive and resource management opportunities, park personnel would continue to research, document, and catalogue the museum collection. Museum objects and archival materials would be conserved to NPS and professional stan-

dards. The park's museum conservation program would continue to provide for the proper preservation and protection of the museum collection.

In accordance with the National Historic Preservation Act, as amended, park managers would continue to locate, identify, and evaluate park resources to determine if they were eligible for listing in the National Register of Historic Places.

Visitor use management and construction mitigation techniques would continue to ensure that human activities were not impairing park resources. Park managers would rely on a variety of actions to minimize these impacts, including visitor education and interpretation, and use of foot patrols to enforce the Archeological Resources Protection Act. The park's archeological site disclosure policy would continue to be followed (see the archeological site disclosure text box).

Park managers would continue to regularly update the "Resource Management Plan" and prioritize actions needed to protect park resources.

held with the owners to resolve any problems.

In the long run, park staff would continue implementing the actions called for in the "Land Protection Plan." Various techniques would be used to protect park values, including cooperative management agreements, acquisition of conservation and access easements, land exchanges, donations, and purchase of fee title. The management of such lands would revert to the zoning and wilderness status proposed in this plan once the land or water rights are acquired or relinquished, and nonconforming uses are removed.

PARK ACCESSIBILITY

The policy of the National Park Service is to maximize accessibility for people (visitors and staff) with disabilities. Guidance on this topic is provided by federal statutes and regulations. These regulations include the Architectural Barriers Act of 1968; the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; 28 *Code of Federal Regulations* (CFR), Part 36 and 43 CFR, Part 17; the Uniform Federal Accessibility Standards of 1984; the U.S. Access Board Draft Accessibility Guidelines for Outdoor Developed Areas of 1999; and NPS *Management Policies* and *Director's Orders*.

- *Desired Conditions:* Zion National Park's buildings, facilities, programs, and services are accessible to and usable by all people, including those with disabilities. All new and renovated buildings and facilities, including those provided by concessioners, are designed and constructed to provide access to people with disabilities. All services and programs, including those offered by concessioners, volunteers, cooperating associations, and interpreters, also are designed to be accessible by people with disabilities. There are opportunities for all

people to access parts of the park's backcountry.

- *Strategies:* Park staff would work with user groups, such as saddle stock groups and disabled people or their representatives, to provide opportunities for the disabled to access to the front and backcountry.

Existing buildings and facilities would be evaluated to determine the degree to which they are currently accessible to and usable by people with disabilities, and to identify barriers that limit access. Action plans would be developed identifying how barriers would be removed.

Similarly, existing programs, activities and services (including interpretation, telecommunications, media, and web pages) would be evaluated to determine the degree to which they are currently accessible to and usable by people with disabilities, and to identify barriers to access. Action plans would be developed identifying how barriers would be removed.

VISITOR USE AND EXPERIENCE

With the exception of commercial guided activities, visitors have had few restrictions on traditional activities in Zion until the past decade or so. However, over 2.5 million people now annually visit Zion and participate in a wide range of activities. Park managers are taking action to manage this use, minimize or avoid resource impacts, and ensure that visitors continue to have the opportunity for high quality experiences.

- *Desired Conditions:* Zion offers a variety of activities that are consistent with the park's purposes and significance. The vast majority of visitors are satisfied with appropriate park facilities, services, and recreational opportunities. Most visitors

understand and appreciate the basic purposes and significance of the park and their stewardship role in preserving park features. They actively contribute to the park's preservation through demonstrated appropriate use and behavior. Visitor use levels and activities are consistent with park purposes and desired resource conditions and visitor opportunities. Resource impacts and conflicts between users are minimal. Visitors have opportunities to experience the natural sound environment of the park in an unimpaired condition. They understand and support management actions that are taken to diminish or avoid resource impacts.

- *Strategies:* If it is necessary to take action to address visitor impacts, park managers would use the method that assures the most resource protection whenever possible. Methods that may be used in this regard include such techniques as providing ongoing visitor education and redesigning or "hardening" facilities (e.g., surfacing a trail or building a fence). More restrictive methods may include implementing a reservation system and requiring permits for certain uses or areas, placing limits on use, and closing areas including trails or campsites. Restrictions on visitor use would be based on a determination by the park superintendent that such measures were consistent with the park's enabling legislation and were necessary to either prevent the degradation of the values and purposes for which the park was established, or to minimize visitor use conflicts.

Park managers would continue to use the transportation system to manage visitor use and distribution within Zion Canyon, according to the need to protect resources and provide quality visitor experiences. Visitor use of specific features or trails would continue to be managed or limited

on a case-by-case basis to protect key visitor experiences.

Park staff would periodically conduct visitor surveys to determine visitor satisfaction with the shuttle system and to determine if congestion was occurring in other parts of the park. Park managers would emphasize visitor education, including pretrip planning regarding the need for and use of the shuttle system.

VISITOR INFORMATION, ORIENTATION, INTERPRETATION, AND ENVIRONMENTAL EDUCATION

The National Park Service uses a variety of methods to orient visitors to Zion, provide information about the park, and interpret the park's resources for visitors. The "Zion National Park Interpretive Plan" (NPS 1996) describes interpretation goals and objectives and interpretive themes. The interpretive plan specifies what park staff will do to provide visitors with information, orientation, and interpretation. The 1996 plan also addresses interpretive media, such as wayside exhibits, bulletin boards, and signs.

- *Desired Conditions:* The National Park Service makes pretrip information available to assist visitors in planning a rewarding visit to the park. Park staff use radio announcements, web sites, mailouts and reservation systems to assist visitors with preplanning. When visitors arrive at Zion, park staff provide information to orient them on what to do (and what not to do), attractions to see, and how to enjoy the park in a safe, low-impact way. Interpretive programs connect the visitor to the park's resources, build a local and national constituency, and gain public support for protecting the park's resources. Outreach programs through schools, organizations, and partnerships build emotional, intellectual, and recreational

ties with the park and its cultural and natural heritage.

- **Strategies:** Park managers would continue to implement the park's interpretive plan, with emphasis on providing information, orientation, and interpretive services in the most effective manner possible. Staff would use state-of-the-art technologies where appropriate.

Park staff would stay informed of changing visitor demographics and desires to better tailor programs to visitor needs and desires. They would develop interpretive media supportive of the park purposes and significant resources.

Working with other federal agencies, the state of Utah, and local communities, park staff would take action to improve pretrip planning and provide enroute information and orientation for park visitors. Park staff would work with local communities and other entities to provide information/orientation and interpretive facilities outside park boundaries where appropriate. Park staff also would seek partnerships with other state and national parks, educational institutions, and other organizations to enrich interpretation and educational opportunities regionally and nationally.

The park evacuation plan and warning system for flash floods would remain in effect. Park staff would continue efforts to educate the public regarding flood hazards and place signage at all new facilities when appropriate to warn of flash flood hazards.

MANAGEMENT OF THE RECOMMENDED WILDERNESS AREA

In 1978, the president recommended to Congress that 120,620 acres within Zion National Park be designated as wilderness and an additional 10,364 acres be identified as

potential wilderness. The National Park Service is currently recommending that 132,615 acres (90% of the land under federal jurisdiction within Zion National Park) be designated as wilderness; 4,175 acres of private lands and water rights within the park boundary remain identified as potential wilderness additions. These adjustments to the 1978 acreage figures are due to (a) the acquisition of several inholdings, state surface and mineral rights, grazing rights, and water rights, (b) the use of geographic information system data, which more accurately delineates the original (recommended) wilderness boundary, and (c) the correction of an error regarding a preexisting private water right on Camp Creek.

- **Desired Conditions:** All of the lands within the recommended wilderness area retain their wilderness characteristics and values. Visitors continue to find opportunities for solitude and primitive, unconfined recreation. Signs of people remain substantially unnoticeable. The area continues to be affected primarily by the forces of nature.
- **Strategies:** Within the next five years, park staff would complete a wilderness management plan, which would include the establishment of specific visitor carrying capacities. Components of the wilderness management plan would address climbing/canyoneering, river recreation, and the potential for commercial guide services. In the meantime, and in keeping with established NPS policies and *Director's Order 41* ("Wilderness Preservation and Management"), the park staff would continue to manage the area recommended for wilderness designation as wilderness.

The park's wilderness committee would also apply a minimum requirement assessment, as defined in *Director's Order 41*, to all activities affecting the wilderness resource and

character. The minimum requirement assessment determines whether or not a proposed management action is appropriate or necessary for the administration of the area as wilderness. If the project was deemed appropriate or necessary, the management method selected would be that which causes the least amount of impact to the physical resources and experiential characteristics of the wilderness. The park staff would also continue to take appropriate action to limit visitor impacts on resources to maintain wilderness values (see also the "Visitor Use and Experience" section).

LEVELS AND TYPES OF PARK DEVELOPMENT

A variety of different types of development exist in Zion to transport, house, inform, and serve visitors and park staff. Most visitor and operational developments are concentrated at the south park entrance and in Zion Canyon. Some of these developments are adequate to meet visitor and park needs; other developments, such as some employee housing, do not meet NPS standards.

- **Desired Conditions:** Park development is the minimum necessary to serve visitor needs and provide for the protection of park resources. Visitor and management facilities at Zion and its concessioners meet sustainability standards, and are harmonious with park resources, compatible with natural processes and surrounding landscapes, aesthetically pleasing, and functional. The Park Service continues to provide access to and use of Zion's facilities for physically and learning disabled visitors, in conformance with applicable laws, regulations, and NPS policies.
- **General Strategies:** Park staff would properly maintain and upgrade existing development using sustainability prin-

ciples where necessary to serve the park mission. They would consider and plan for flood hazards and mitigation efforts as appropriate.

Park managers would consider the availability of existing or planned facilities in nearby communities and adjacent lands when deciding whether to construct new developments in the park. This would ensure that any additional development in the park is necessary, appropriate, and cost-effective.

The National Park Service would continue to strive to make affordable housing available within commuting distance of the park (60 minutes), for park staff who are nonemergency response personnel, seasonal employees, lower graded employees, occupants of historic quarters, and concessioner employees.

The National Park Service would modify existing facilities to meet accessibility standards as funding allowed or as facilities were replaced or rehabilitated. Park staff would periodically consult with disabled persons or their representatives to increase awareness of the needs of the disabled and to determine how to make the park more accessible.

Entrance stations would remain on the south and east boundaries of the park (along the Zion-Mt. Carmel Highway), and at Kolob Canyons. Entrance fees would continue to be collected at these stations.

Park managers would work with other governmental, private, and nonprofit organizations to find partners and funding sources for a research/environmental education facility and to explore locations within and outside the park to establish the facility.

The National Park Service also would continue to seek opportunities to build the other management facilities called for in the *Development Concept Plan, Zion Canyon Headquarters* (1994b) and the *1997 Canyon Transportation System Environmental Assessment* (NPS 1997a).

UTILITIES AND COMMUNICATIONS FACILITIES

Basic utilities and related access are necessary within the park to support visitor services and administrative operations and to provide for visitor and employee safety. Occasional maintenance, upgrades, and minor route adjustments are carried out within existing corridors.

Currently, a transmission line right-of-way and a road easement cross the park. The transmission line provides electric power to Rockville, Springdale, and the park's south entrance and main Zion Canyon area. The road easement in effect, between Interstate Highway 15 and the Kolob Canyons visitor center, provides access to a water tank on private lands. This easement includes maintenance of an existing privately owned water line buried in the road corridor.

- *Desired Conditions:* Utility and communications facilities support park operations and public safety with a high degree of reliability, anticipate future loads and needs, minimize impacts on park resources, and are jointly located with other existing facilities and rights of way to the greatest extent possible. Only those communications facilities necessary to provide for public safety and administrative efficiency are located in the park.
- *Strategies:* New or reconstructed utilities and communications infrastructure would be located in association with existing structures and along roadways or other

established corridors in developed areas. This would allow ready access for repair and maintenance, thereby reducing potential visual quality impacts and resource disturbance from overland transport of vehicles and equipment.

When utilities require reconstruction or extension into developed areas not currently serviced, park staff would select routes that would minimize impacts on the park's natural, cultural, and visual resources. Rights-of-way would continue in effect or be established for service lines to existing and planned park facilities (including concessions facilities). Rights-of-way would be granted for utilities, water conveyance, or other facilities within potential, proposed, or designated wilderness areas except where valid existing rights are established.

Utility lines would be placed underground to the maximum extent possible.

In the southwest corner of the park, a right-of-way exists for a powerline serving Rockville, Springdale, and the park. Due to concerns regarding the age of the infrastructure and growth in the communities, Utah Power and Light has proposed to reconstruct a higher capacity line between 2001 and 2003. The existing right-of-way for the powerline on all maps in this plan is shown as administrative. A separate environmental analysis would be conducted to evaluate routes for the proposed new powerline, including alternatives within and/or outside the park. Park staff would work with the utility company to analyze and select alternative techniques and routing to minimize potential impacts on the park's natural, cultural, and visual resources. Public involvement through the National Environmental Policy Act process would be solicited.

There is potential for natural gas service to the park, Springdale, and Rockville, routed along State Highway 9. If this possibility materializes, park staff would work with the service company, local communities, and the public to locate the line in a manner that minimizes the effects to park resources. A right-of-way would be established for natural gas distribution lines to NPS facilities within the main Zion Canyon area.

Maintenance of the existing NPS radio system would be continued with solar-powered repeaters at existing sites.

Additional park communications equipment is anticipated for the operation of the Zion Canyon transportation system and providing needed coverage along the Kolob-Terrace Road. These are minimal facilities, which would be located in administrative areas or co-located with existing radio facilities.

Commercial telecommunications applications (Telecommunications Act of 1996) will be processed in accordance with NPS policies (RM-53) and NEPA guidelines. The primary tests for the applications will be whether there is a documented public safety need, whether or not there are feasible alternatives, and whether a facility would result in derogation of the resources, values, and purposes for which the park was established. For NPS and commercial communications needs there will be no facilities located within potential, proposed, or designated wilderness areas (Wilderness Act, 16 USC §1131), except as specifically provided by law or policy.

SUSTAINABILITY

Sustainability can be described in this context as the result achieved by conducting activities

in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short- and long-term environmental impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy efficient and ecologically responsible materials and techniques.

Over the past several years, the federal government has been placing more emphasis on adopting sustainable practices. In particular, Executive Order 12873 mandates federal agency recycling and waste prevention, and Executive Order 12902 mandates energy efficiency and water conservation at federal facilities.

- *Desired Conditions:* All decisions regarding park operations, facilities management, and development in Zion — from the initial concept through design and construction — reflect principles of resource conservation. Thus, all park developments and park operations are sustainable to the maximum degree possible and practical. New developments and existing facilities are located, built, and modified according to the *Guiding Principles of Sustainable Design* (NPS 1993) or other similar guidelines. The park has state-of-the-art water systems for conserving water, and energy conservation technologies and renewable energy sources whenever possible. Biodegradable, nontoxic, and durable materials are used in the park whenever possible. Park personnel promote the reduction, use, and recycling of materials and avoid as much as possible materials that are nondurable, environmentally detrimental, or that require transportation from great distances.

INTRODUCTION

- *Strategies:* Park staff would work with experts both in and outside the agency to make Zion's facilities and programs sustainable.

Park managers would perform value analysis and value engineering, including life cycle analysis, to examine the energy, environmental, and economic implications of proposed park developments.

Park staff would support and encourage the service of suppliers, contractors, and concessioners that follow sustainable practices.

Park interpretive programs would address sustainable park and nonpark practices.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION



INTRODUCTION

This part describes the National Park Service's proposed approach (the preferred alternative) and three alternative approaches for managing Zion National Park — two action alternatives and one no-action (i.e., baseline) alternative. The alternatives and the assessment of the potential environmental consequences of the alternatives form the core of the *Final Zion General Management Plan / Environmental Impact Statement*. Alternatives in this plan describe different general visions for the future of the park. They are intended to enable managers, users, neighbors, and the public to consider different approaches to managing visitor use and resources, directing development, and resolving conflicts that may arise at Zion National Park.

This part describes the planning process used by the planning team. It also describes the assumptions made, management zones developed, and range of alternatives generated based on zone-management strategies. This part also describes alternatives, management zones, and actions the team considered but dropped from consideration. The part then describes the four current alternatives — the no-action alternative, which describes existing management in the park; the proposed plan for Zion National Park (the preferred alternative); and the two other action alternatives. The end of this part contains three tables (tables 5-7) that summarize the key differences between the alternatives and the key differences in the impacts that are presumed will result by implementing each alternative. The impacts table is based on the analysis in the subsequent "Environmental Consequences" part.

THE PLANNING PROCESS

In formulating the alternatives, the planning team considered the park's purposes and significance, the National Park Service

Planning Assumptions

Before the planning team developed the concepts for the alternatives, team members identified several fundamental assumptions that underpin the *Final General Management Plan*. The planning team considered these assumptions to be "givens" for all of the alternatives and for how the park is managed in the future.

- Existing major developments in the park will remain, although their functions may change. Park staff will continue to maintain the Zion-Mt. Carmel Highway, between the south and east entrances of the park, which will remain opened to through (i.e., nonrecreational commuter) traffic.
- The National Park Service will not build major new facilities, such as campgrounds, lodges, roads, and full-service visitor centers, within the park, aside from those associated with the transportation system. The planning team assumes that the private sector will provide lodging and camping facilities outside of the park.
- The National Park Service will continue to operate the Zion Canyon shuttle system, as described in the 1997 *Zion Canyon Transportation System Environmental Assessment*.
- Park managers will adjust staffing levels to reflect the increase in workloads.

mission, and other legal mandates and policies under which the park operates. In addition, the planning team solicited input from the public, government agencies, and other organizations about desired future conditions for the park and specific issues that need to be addressed by each of the alternatives regarding levels of visitor use; water resources; development adjacent to the park, and the like. Team members also gathered information about existing visitor use and the condition of the park's facilities and resources, and they performed resource sensitivity analyses to understand the ability of park resources to withstand visitor use. Finally, the team

ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

identified a number of assumptions to guide development of the alternatives (see box). Appendix E describes in detail how the planning team developed the alternatives. Also, refer to the box with definitions of relevant planning terms.

Using all of the above information, the planning team developed seven potential management zones for guiding the use, development, preservation, and understanding of Zion National Park and its resources. These zones form the basis of the range of reasonable alternatives proposed by the planning team, and are described below. The zones are applied in varying combinations and locations in the three action alternatives. (Note: the zones do not apply to the no-action alternative.)

In October 1997, the planning team presented the initial alternatives and zone management strategies in a workbook for public review. Based on comments from the public as well as park staff, the planning team then greatly revised the initial alternatives, dropped some alternatives and zones from consideration, and identified a preferred alternative.

Each of the action alternatives identified by the planning team consists of the following elements:

- an overall management concept
- a series of general management strategies and zone-specific management strategies (i.e., zone allocations and actions) that would be implemented
- proposals that require congressional action
- a discussion of priorities and funding necessary for implementing each alternative

Unless otherwise stated, all existing uses and facilities would continue to occur in the park under all of the alternatives.

Definitions of Planning Terms

The following terms are used throughout this document.

Desired conditions refer to the goals or end results park managers are striving to achieve. The NPS can set desired conditions for park resources, visitor experiences, management activities, and facilities. Desired conditions reflect the park's purposes and mission goals, and ensure that the NPS preserves Zion's resources and provides quality experiences.

General management strategies describe the general actions park managers intend to take to achieve the desired conditions. These strategies are not tied to management zones. They may apply parkwide (e.g., general visitor use management) or to specific geographic areas or facilities (e.g., Zion Canyon Lodge).

Management zones identify how different areas in the park will be managed to achieve a combination of desired conditions. Each zone prescribes a unique combination of physical, biological, social, and managerial conditions.

Zone-specific management strategies describe the actions that would, or could, be taken to achieve the desired resource conditions and visitor experiences for a given zone.

As noted in "Park Policies and Practices," the National Park Service would continue to follow a number of strategies in Zion regardless of the alternatives considered in this plan. These strategies are not repeated in this part. However, there are *other* general management strategies that *do* differ among the alternatives. These alternative management strategies are organized in this part by topic area.

Several other points are important to keep in mind while reading the management alternatives. The alternatives are conceptual in nature, focusing on *what* resource conditions and visitor experiences *should* be in Zion rather than on details of *how* they should be achieved. Thus, the alternatives do not contain details on facility designs and locations or describe specific visitor use management techniques. The Park Service will require additional feasibility studies, more detailed

planning, and appropriate environmental documentation before it can build any developments proposed in the alternatives. The implementation of any alternative also depends on future funding — this plan in no way guarantees that the money will be forthcoming. The *Final General Management Plan* establishes a vision of the future that will guide year-to-year management of Zion National Park, but full implementation of the plan could be many years in the future.

The three action alternatives propose actions that may be taken as a result of zoning requirements and restrictions. These possible actions are identified for specific areas of the park. Some of the actions are required to meet the desired zone conditions. Other actions are intended to improve visitor experiences and/or resource conditions in areas that presently satisfy zone conditions at some minimal level. The actions described are those the planning team believed to be the most likely to take place over the next 20 years in the park given the zone definitions, what already exists in an area, and the area's environmental constraints.

Finally, another important point to keep in mind is that Zion is in an area where geologic and other natural forces are continuing to shape the landscape. It is not possible to plan for these changes during the life of the plan. However, if a major disaster occurs, such as a landslide or fire, the National Park Service will reconsider its goals for the affected area, including zone prescriptions, uses, and infrastructure, and amend the plan accordingly.

SUMMARY OF THE MANAGEMENT ZONES

Under the preferred alternative (and the other action alternatives), Zion would be divided into different zones. These zones identify how the different areas of the park would be managed to achieve desired resource and

social conditions and to serve recreational needs. The zones are intended to protect park resources and make a range of quality activities available for visitors. The zones give visitors an understanding of where certain activities are and are not allowed. They also tell park managers where development can and cannot be added and the intensity of management that is appropriate in different parts of the park. Note that the no-action alternative would not follow a new zone-management strategy.

The key elements of the zones are summarized below. (Appendix D describes additional details on the zones.) It is important to note that three of the zones place interim limits on the number of people, and one of the zones places an interim limit on saddle stock groups in the backcountry — managing group sizes and encounters with other groups will affect how many people can go into different areas in the park. These limits would be re-examined in the carrying capacity studies and possibly modified in the subsequent wilderness management plan.

Frontcountry High Development Zone. This zone would provide visitors with highly structured opportunities to enjoy and learn about the park by means of motorized, primary roads. In essence, visitors would feel that they were in a pocket of civilization surrounded by the park's natural beauty.

- Both natural processes and the natural landscape would be highly modified.
- A wide array of visitor services and facilities would be available, including primary motorized roads, visitor centers, and developed campgrounds.
- Visitors would experience highly social conditions, although there would be some opportunities at certain times for solitude.
- Limits would only be placed on the numbers of people to address resource

protection concerns or facility design capacities.

Frontcountry Low Development Zone.

Visitors would have a fairly structured, rural experience oriented around motorized sightseeing on secondary roads, camping, picnicking, and taking short walks.

- Natural conditions would be unmodified in most of the zone.
- Basic facilities and services would be provided, but they would be fewer and less concentrated than in the frontcountry high development zone. Focused visitor facilities, secondary roads, picnic areas, and less developed campgrounds are examples of facilities that may be present.
- There may be opportunities to camp in campgrounds.
- There would be few opportunities for solitude, but the social environment would remain uncrowded.
- Limits would only be placed on the numbers of people to address resource protection concerns or facility design capacities.

Transition Zone. The main purpose of this zone would be to allow visitors to view or directly access many of the park's prime resources by means of nonmotorized, well-developed, high use trails.

- Natural processes and landscapes may be altered or manipulated in developed areas, but most of the landscape would be largely undisturbed and the resources protected.
- This would be a day-use zone. Only minimal facilities (e.g., trails) would be present. Park managers would concentrate visitor use within or near these facilities.
- During the peak season, there would be a low expectation of solitude due to the sights and sounds of other people. However, crowded levels would not keep

Definitions of NPS Visitor Facilities

The following types of NPS facilities are present in the development zones.

Full-service visitor centers provide a variety of services including: restrooms, orientation, interpretation (e.g., introduction to the park, themes, all manner of interpretive media), trip planning, item sales (interpretive and informational), and fee collection (e.g., as part of trip planning). Park staff would also issue permits at these centers, but would not provide food service. Full-service visitor centers would only be allowed in the frontcountry high development zones.

Focused visitor facilities focus on only a few functions. Unlike a full-service visitor center, these facilities provide interpretation related to resources at-hand, and limited, if any, sale items. Restrooms may be present. Focused visitor facilities may be indoor or outdoor, and be staffed or unstaffed, depending on need and the services provided. They may be found in both frontcountry low development and frontcountry high development zones.

Picnic sites have tables and could include grills, trash facilities, and restrooms. Water would be provided only if it was already present. In the frontcountry high development zone, many picnic sites could be added to a given area, but in the frontcountry low development zone, the number added could only total a cumulative of 10 sites per area, such as at Lava Point. Picnic sites may be located in frontcountry high development, frontcountry low development, and transition zones.

visitors from reaching desired destinations or viewing outstanding park features.

- Limits would only be placed on day use to address resource protection concerns or facility design capacities.

Primitive Zone. This zone would provide better opportunities for visitors to experience wildlands and solitude than the zones described above. However, compared to the pristine zone, access would be easier into this zone, there would be signs of people, and the area would feel less remote.

- The landscape would be largely undisturbed, with natural processes predominating.
- There would be very little development. Only narrow, unpaved trails and/or routes would be maintained. Other facilities related to protecting resources may be provided.
- Primitive camping may be permitted at large or in designated campsites, but camping facilities would not be provided.
- There would be a sense of being in a natural landscape with a moderate sense of solitude.
- Park personnel would manage the number of people in this zone. Hiker group sizes for day and overnight use would continue to be limited to 12 or fewer individuals. A maximum of six saddle stock and six people would be allowed per group. Hikers would generally encounter no more than 12 groups per day in the zone, while saddle stock groups would encounter no more than one other group per day (*Note: All of the above limits are interim limits, which may change in the future.*).

Pristine Zone. The pristine zone would offer the feeling of being entirely alone in Zion's remote and isolated wildlands. Visitors would have a chance to experience a natural landscape.

- Natural conditions and processes would be largely undisturbed by people. Bolts on climbing routes may be present. Culturally significant resources also may be maintained.
- Routes and paths may be defined and maintained if necessary to prevent resource damage; no other visitor facilities would be provided.
- Visitors could camp throughout the zone, although in some cases, camping sites would be designated to protect resources.

- Opportunities for a high degree of solitude would be provided throughout the zone.
- Use of these areas would be limited. Saddle stock use would be prohibited. Hiker groups would continue to be limited to no more than 12 people. Visitors would usually not expect to encounter other groups in the zone (*Note: The group sizes and encounter rates are interim limits, which may change in the future.*).

Research Natural Area Zone. A research natural area (RNA) is an administrative designation that federal land management agencies use to designate field ecological areas primarily for research and educational purposes and/or to maintain biological diversity. This zone applies the key conditions of research natural areas. Conducting baseline inventories and long-term ecological observations would be emphasized in this zone, with the primary purpose to create an ecological/environmental benchmark over time. This zone would not be opened to recreational uses, but may be opened to educational uses.

- Research natural areas would be areas with little to no human disturbance.
- No visitor facilities would be present. Trails and temporary research equipment may be permitted in limited instances.
- In general, camping would not be permitted, unless it was essential for meeting research goals and was consistent with other park policies.
- Group sizes for research, educational, and administrative activities would be limited to 12 or fewer individuals. (*Note: The group size is an interim limit, which may change in the future.*)

Administration Zone. The primary purpose of this zone would be to support the management and administration of the park. General visitation would not occur, although some visitors may need to access these

facilities/areas to obtain staff assistance or to solve a problem.

- Natural processes and landscapes would be altered to support park operations.
- The type and level of development and concentration would vary as needed to provide for park operations.
- NPS staff, concession employee, and scientists may be provided with housing, but visitor camping would not be permitted.
- Park staff would not encourage public visitation, although there would be no limits placed on the use of this zone.

ALTERNATIVES, ZONES, AND ACTIONS CONSIDERED BUT NOT ANALYZED FURTHER

The five alternatives initially presented in the October 1997 workbook formed the foundation for the alternatives included in this plan/EIS. Based on public input and further analysis of the five initial alternatives, the planning team revised these alternatives. The team dropped three of the original alternatives from consideration, although they incorporated key elements of these alternatives into the remaining alternatives. In addition, the team dropped two potential management zones — semiprimitive and resource reserve management areas. Appendix E explains the rationale for why the alternatives and management zones were dropped.

The planning team considered several actions during the planning process, but subsequently eliminated them from further analysis. These actions and the rationale for no longer considering them are described below.

Opening Parunuweap Canyon to Public Use

In several of the draft alternatives presented in the October 1997 alternatives workbook, the

planning team zoned part or all of Parunuweap Canyon for pristine or primitive use. These zones would allow for limited, but independent, travel through the area by the public. The team determined, however, that such use would have too great a potential for disturbing or harming the highly sensitive resources within Parunuweap Canyon. Therefore, under the action alternatives, park managers would permit public visitation only for authorized activities described in the action alternatives.

Adding Frontcountry Camping Facilities

Although considered in some of the draft alternatives in the October 1997 alternatives workbook, the planning team decided not to add new camping facilities in Zion's frontcountry (with the exception of slightly expanding the Lava Point campground). The team believes that the private sector outside the park should and can provide these facilities. This belief is supported both by *NPS Management Policies* (2001), as well as by the fact that private interests are already developing new campgrounds at various locations outside the east entrance of the park.

Terminating the Zion Canyon Shuttle System at the Zion Canyon Lodge

One of the actions the planning team considered was terminating the Zion Canyon shuttles at the lodge. This action would mean motorized use north of the lodge would be prohibited, which would dramatically reduce visitor use levels at the Temple of Sinawava and the Narrows, reduce resource impacts, and provide the opportunity for high-quality experiences for those able to hike or bicycle up the canyon. The planning team dropped this action because it would prevent a large majority of people from enjoying one of the park's primary attractions.

NO-ACTION ALTERNATIVE

CONCEPT

This alternative provides a baseline for evaluating the changes and impacts of the other action alternatives. Under this alternative, the Park Service would continue to manage Zion as it has in the past, relying on existing plans. All existing visitor facilities would remain in place. The main Zion Canyon, Kolob Canyons, and the Zion-Mt. Carmel Highway would continue to be the primary visitor attraction areas (see the No-Action Alternative map). No new construction would be authorized and no major changes would be made in managing the park.

GENERAL MANAGEMENT STRATEGIES

In the no-action alternative, park staff would continue to follow all of the desired conditions and strategies described earlier in "Park Policies and Practices." For example, the desired conditions and strategies for the Zion Canyon Lodge and the North Fork of the Virgin River in the no-action alternative reflect how park managers are currently managing the lodge and the river.

Under the no-action alternative, park managers would also implement additional strategies for managing visitor use that were not listed in "Park Policies and Practices." Many of the desired conditions and strategies described below are already being carried out. Others have not yet been implemented, but funding for them is imminent, or they have been covered in other existing plans and documents that have undergone appropriate environmental compliance.

Visitor Use Management Strategies

Park managers would follow all of the policies and practices for managing visitor use that were identified in the "Park Policies and Practices" chapter. With the exception of the trail ride concessioner, commercially guided activities in the park would continue to be prohibited. Short NPS-guided hikes in the main canyon would continue to be provided and visitor center and campground programs would still be offered.

Aside from the existing visitor use management policies listed below, park managers would likely place few additional limits on visitor use. Thus, visitation could continue to increase throughout most of the park. Park staff would continue to enforce the following existing use management policies:

- Groups in the backcountry would not exceed 12 people in the same drainage, route, or trail on the same day.
- The Left Fork of North Creek would continue to be a day use only area. Park managers would continue to require a permit for all users, and there would be a limit of 50 people per day who can hike in the drainage.
- Visitors would still need to obtain permits to day hike from the top of the Zion Narrows (Chamberlain's Ranch) to the Temple of Sinawava; a maximum of 80 people per day would be allowed to undertake this hike.
- Visitors would continue to need a permit to overnight hike through the Zion Narrows. The policy to allow only one-night stays would continue. Overnight hikers must start from Chamberlain's Ranch and camp at designated campsites. A maximum of 12 parties (70 people) would be permitted to camp in the Narrows at any one time.

ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

A total of 23 parties would be permitted to camp overnight at designated sites along La Verkin Creek/Hop Valley trails.

- A total of nine parties would be permitted to camp overnight at designated sites along the West Rim trail.
- Excluding the concessioner operation on the Sandbench trail, a maximum of six saddle stock (of which no more than three could be without riders) and six people would be permitted in any single party traveling in the park. Saddle stock would continue to be confined to established trails in the recommended wilderness area, with four exceptions (lower Coalpits Wash, Huber Wash, Scoggins Wash, and Dalton Wash/Crater Hill). Overnight camping with saddle stock would continue to be limited to a Hop Valley campsite, and would be permitted for one night only. The main Zion Canyon trails from the rim down (with the exception of the Sandbench trail), the Timber Creek Overlook trail, and several areas in the recommended wilderness area (Kolob Arch trail, Beartrap Canyon, Willis Creek, the East Mesa trail below its junction with the Observation Point trail, the West Rim trail below the West Rim, and the Taylor Creek) would continue to be closed to saddle stock due to trail conditions and safety and resource concerns.

Definition of Saddle Stock

Saddle stock in Zion National Park are defined as horses, mules, and burros. Under the no-action alternative (and all other alternatives) llamas, goats, dogs, and all other animals would be excluded for use within the park.

Desired Conditions and Strategies for Zion Canyon Lodge

The lodge operation has been a traditional use in Zion for more than 80 years. It has enabled many visitors to stay in the canyon by providing overnight accommodations and food services. Although the lodge is the only place offering these visitor services inside the park, other facilities and services are available in Springdale and nearby communities.

- *Desired Conditions:* The Zion Lodge offers a unique historical visitor experience that adds to visitor enjoyment and is distinct from the experience provided in surrounding communities. The lodge continues to provide food services, a gift shop, and overnight accommodations. The lodge operation remains at a sustainable level, within the land assigned to the concessioner in their 1998 contract.
- *Strategies:* During periods of contract renewal or renegotiations, the National Park Service would continue to include provisions to ensure that the lodge maintained the qualities of a "historic district" and provided opportunities for visitors to enjoy this historic resource. A subsequent commercial services plan for the park would describe these qualities more fully. The Park Service would retain the characteristics of the lodge as a "historic district," listed on the National Register of Historic Places, and would consider these characteristics in planning, managing, maintaining, and interpreting the entire complex.

Desired Conditions and Strategies for Management of the North Fork of the Virgin River

The North Fork of the Virgin River is one of the park's major visitor attractions.

Thousands of visitors come to the river to cool off, swim, wade, hike, and backpack, among other recreational activities. The river also has outstanding geologic value and provides important habitat for four native fish species, including the Virgin spinedace, and other aquatic organisms. Its riparian area also supports diverse wildlife and plant populations.

- **Desired Conditions:** The North Fork continues to provide high-quality experiences for visitors. Visitor use levels and activities are consistent with park purposes — visitors enjoy the river without impairing resources. Conflicts between users are minimal. The river's water quality and natural biological community are improved or maintained and protected. No additional human-caused changes occur to the river's floodplain.
- **Strategies:** Park managers would continue to enforce existing visitor use limits for day hikes and overnight camping in the Narrows. Interpretive displays and programs and ranger patrols would still be used to help minimize resource impacts and user conflicts. Under this alternative, no actions would be taken to restore the North Fork of the Virgin River. The existing riverbank armor and levees would remain.

GENERAL PARK MANAGEMENT

Under the no-action alternative, park managers would continue to manage three broad land use categories (not including the private inholdings within the park boundary): developed areas (or frontcountry), recommended wilderness, and natural areas. Developed areas cover about 740 acres and include lands with aggregations of visitor facilities and administrative facilities. The

following facilities are in developed areas of the park:

- Kolob Canyons Road
- Kolob Canyons visitor center/maintenance/housing area
- Timber Creek Overlook picnic area and parking area
- Lava Point (including the campground, picnic area, ranger residence/visitor contact building, and trailhead)
- South entrance station/parking area
- South and Watchman campgrounds
- Old visitor center/headquarters
- New visitor center/transportation staging area
- Oak Creek residential and maintenance area
- Sammy's Canyon shuttle maintenance facility
- Watchman and Pine Creek (superintendent) residential areas
- Birch Creek concession area and the water and storage facility
- Zion Canyon Lodge and related facilities
- Grotto picnic area
- Weeping Rock parking lot
- Temple of Sinawava parking lot and restrooms
- Zion-Mt. Carmel Highway
- Tunnel parking lot and trailhead
- East entrance station/housing area

As called for in the development concept plan for the Zion Canyon headquarters area (NPS 1994b), the National Park Service would build research facilities in the south entrance-main Zion Canyon area in association with existing and other planned facilities. The research facilities, consisting

of a small laboratory and housing, would support resource monitoring and studies conducted by park staff and cooperators.

Most of the park would be within the wilderness land use category. The remainder of the park that did not fit in the developed areas or recommended wilderness categories would be managed as natural areas. The management of the natural areas would provide for environmentally compatible recreational activities based upon and protective of the natural environment. Park roads, dispersed recreational facilities, such as picnic areas, and interpretive facilities, may be present in these areas.

Recommended Wilderness

In 1974 the National Park Service completed an environmental impact statement that proposed that most of Zion National Park be designated as wilderness (NPS 1974). A wilderness recommendation for Zion was sent to Congress in 1978. Since the 1978 recommendation, minor adjustments have been made (see the Wilderness Recommendation and Land Status map). The wilderness recommendation now totals 132,615 acres due to the acquisition of several inholdings, state surface and mineral rights, grazing rights, and water rights, the use of more accurate geographic information system data (which more accurately delineates the original (recommended) wilderness boundary), and the correction for a preexisting private water right on Camp Creek (which was inadvertently overlooked in the original wilderness recommendation). An additional 4,175 acres (3% of the park) would continue to be administered as potential wilderness — lands that currently do not qualify for designation due to nonconforming or incompatible uses (e.g., private inholdings, private water rights) — in keeping with valid existing rights.

Until the Congress acts on the wilderness recommendation for Zion National Park, the National Park Service would continue to manage the recommended wilderness area in a manner consistent with the 1964 Wilderness Act, NPS management policies, and *Director's Order 41* ("Wilderness Preservation and Management"). Zion visitors would continue to be allowed to camp, hike, climb, and canyoneer on established trails as well as cross-country (off-trail). Existing trails, routes, designated campsites, and other wilderness structures would be maintained at current standards.

Saddle stock would be confined to established trails in the recommended wilderness, with four exceptions: off-trail use of saddle stock would continue to be permitted in lower Coalpits Wash, Huber Wash, Scoggins Wash, and Dalton Wash/Crater Hill. Several areas (described in the Visitor Use Management Strategies" section) would continue to be closed to saddle stock.

Under the no-action alternative Parunuweap Canyon would remain closed to public use.

Research Natural Areas

Zion currently has three designated research natural areas: Bighorn (8,313 acres), Phantom Valley (22,409 acres) and the Kolob Mesas (279 acres) (see the No-Action map). These areas are also in the recommended wilderness. Under the no-action alternative, park managers would continue to manage the three research natural areas as they have been in the past and continue to permit recreational users into these areas. Parunuweap Canyon would continue to be a proposed research natural area and would be closed to recreational use.

PROPOSED BOUNDARY ADJUSTMENTS AND EASEMENTS

No adjustments to Zion's boundary would be made in this alternative, nor would any access or conservation easements be sought.

PROPOSALS FOR WILD AND SCENIC RIVER DESIGNATION

At the same time the planning team was developing this plan, a wild and scenic river suitability/eligibility study was being prepared. However, for purposes of comparing and analyzing the impacts of the alternatives in this environmental impact statement, under the no-action alternative no proposals would be submitted to Congress to designate any of the rivers and streams within or adjacent to Zion as wild and scenic rivers.

IMPLEMENTATION

Priorities and Funding

Park managers would continue to implement the management strategies described under

this alternative and under the "Park Policies and Practices" chapter over the next 15 to 20 years as funding becomes available. The National Park Service could establish partnerships with other agencies or groups to implement these actions; however, management emphases and related staffing allocations would be retained as identified in approved documents, such as the Zion "Resource Management Plan."

Cost Implications

Current costs of managing the park and costs of implementing any decisions made prior to this planning effort (such as implementing the transportation system in the main canyon) would not vary among the alternatives.

The no-action alternative would be the least expensive for the National Park Service to implement because it does not require any new actions, and thus the Park Service would not incur additional costs.

THE PREFERRED ALTERNATIVE

CONCEPT

The preferred alternative, which the National Park Service plans to implement for Zion National Park over the next 20 years, is intended to safeguard the future integrity and diversity of park resources and provide for a range of quality visitor experiences within that context. This alternative would emphasize management of resources and visitors rather than providing new developments—any proposed developments would be intended primarily to protect resources and secondarily to improve visitor experiences. Visitors would have opportunities to participate in a variety of park experiences, ranging from social to wilderness experiences. Under this alternative, unlike the no-action alternative, park managers would establish a framework to proactively address impacts that result from increased visitor use levels. For the first time, management zones would be applied throughout the park to identify desired resource and visitor experience conditions and to set the basis for determining visitor carrying capacities. With prescriptions for resource conditions and visitor experiences, managers can take actions, including setting limits, to ensure that Zion's resources are unimpaired for future visitors to enjoy.

VISION FOR FRONTCOUNTRY AREAS

The frontcountry experiences would vary dramatically throughout the park. Visitors to the Kolob Canyons area could expect to leave an intensive, high-speed feeling from travel on I-15 and be immersed almost immediately in the scenic grandeur of the Kolob Fingers, an especially inviting trip at sunset when the sandstone cliffs almost glow. The natural environment would be

largely undisturbed, and visitor facilities would serve to assist in the transition and serve as an information source for the trails accessible along the scenic drive.

An even more rural experience would be gained by travel along the Kolob-Terrace Road, connecting the town of Virgin to the pine covered plateaus north of the park. A few small visitor facilities along the road and at Lava Point would continue to reflect the low intensity, remote nature of the park.

Visitors would be treated to a decompression zone, leaving I-15 traveling through small communities, and then along the scenic corridor where the sandstone formations of Zion and nearby BLM areas are protected from development. Visitors arrive via SR-9 in the town of Springdale, which is nestled on three sides by Zion National Park. They would find that Springdale reflects the mood and feeling of being in the park. The streetscape would reflect the rustic architecture found in the park, and there would be a seamless effect provided by the transportation system shuttle stops. The emphasis on pedestrians would cause one to slow down mentally as well as physically. The visitor center located just inside the park boundary would simplify this relaxation approach, encouraging visitors to stroll through the facility gaining an appreciation for the park's resources and learning how best to use the transportation system.

A rural atmosphere would again be provided for those visitors entering the park from Mt. Carmel Junction along SR-9. Opportunities for park orientation may be developed along the way. Inside the park, the Zion-Mt. Carmel Highway would stay as is, with opportunities for scenic viewing of the cross-bedded Navajo sandstone being the prime visitor experience on the park's eastside.

Natural processes and landscapes in the frontcountry would be unaltered, except within or directly adjacent to the limited developed sites. In these areas, alterations would blend in with the natural landscape.

VISION FOR BACKCOUNTRY AREAS

About 90% of the park has been recommended for designation as wilderness. Visitors entering this area would expect to find quiet and solitude and experience the Zion, where natural conditions prevail. The only sounds heard here would be natural sounds. Natural processes and the landscape would be unaltered, except for minimal developments such as designated campsites, trails, and routes in some areas.

Visitors to the backcountry would be exposed to the value of wilderness in its own right, as a part of the American heritage. This natural environment, away from social pressures, tension, and stimuli brought by civilization, would allow the visitors to experience the restorative and spiritual powers of wilderness.

These backcountry areas would also allow people to examine ecosystems as they have evolved outside significant human influence. They would provide a source of information for people to learn about natural processes, species diversity, and the importance of physical and biological systems.

In particular, land zoned pristine, primitive, research natural areas (RNA), and some portions of the transition zone would be managed for wilderness values. A large percentage of these areas in the backcountry of Zion are inaccessible due to steep topography (see Areas of Relative Inaccessibility map in the "Affected Environment" part). Existing trails and routes throughout the backcountry reflect the character of wilderness, and are managed to maintain the

wilderness resource. In these areas visitor use would be managed to ensure these visitor experiences and resource conditions retained their wilderness character.

GENERAL MANAGEMENT STRATEGIES

In this alternative, park managers would follow all of the desired conditions and strategies described in the "Park Policies and Practices" chapter, plus several additional management directions and strategies. These strategies relate to managing natural resources in general, supplying and conserving water, and managing visitor use and various levels and types of park development. New desired conditions and strategies for managing the North Fork of the Virgin River would also be implemented under this alternative.

General Natural Resource Management Strategy

Park managers would pursue one additional general natural resource management strategy under the preferred alternative compared to the no-action alternative. This strategy reflects the need to gather additional information on resources affected by visitor use:

- The Park Service would conduct long-term monitoring as part of the implementation of a carrying capacity process, and would implement the monitoring program upon approval of the proposed plan. (This strategy also relates to the strategy of developing indicators and standards, described below under "Park Carrying Capacity and Visitor Use Management Strategies.")

Natural Resource Mitigation Measures

Under this alternative, the National Park Service would follow all of the natural resource mitigation measures described under "Park Policies and Practices." In addition, park managers would apply the following measures to avoid or minimize impacts on natural resources.

- Where possible, new developments would be built in previously disturbed sites. New developments also would be built away from microbiotic soil crusts.
- Prior to any construction in areas where spotted owls are known or suspected to occur, park managers would evaluate the specific locations for new developments, such as picnic areas and trails, in consultation with the U.S. Fish and Wildlife Service. No new facilities would be built during the owl breeding/nesting season (March 1 - August 31).
- No new designated camping sites would be located in Mexican spotted owl territories. If survey results indicated that visitors were camping near nest or roost sites, restrictions would be placed on camping in those areas.
- Park staff would survey proposed development sites for rare plants and would relocate new developments if rare plant populations were present. Similarly, trails and routes would be located to avoid impacts on rare plants.
- Site specific measures, such as the placement of silt fencing, retention and replacement of topsoil, revegetation of sites, and selective scheduling of construction activities, would be taken to reduce runoff from construction sites. Workers also would be required to control dust, and all construction machinery would be required to meet air emission standards. Restoration efforts would be scheduled to minimize impacts on downstream water users and to avoid the Virgin spinedace spawning periods.
- Wading and hiking in streams with Virgin spinedace would be managed to minimize impacts on the fish.
- To minimize impacts of trail erosion and social trailing on microbiotic crusts in developed areas, park staff would place barriers, erect signs, and rehabilitate damaged areas.
- To help minimize the spread of nonnative plants, park managers would allow only the use of weed-free materials and equipment for park operations and visitor use activities.

Water Supply and Conservation Strategies

In addition to the water quality and quantity strategies described in the "Park Policies and Practices" chapter, park managers would follow one other strategy under this alternative to maintain Zion's water quality and improve water conservation in the park.

To evaluate the possibility of restoring springs in Zion Canyon and to explore water conservation techniques, the National Park Service would study water supply and treatment alternatives. This study would examine alternative ways for the National Park Service to obtain drinking water, including the procurement of treated water from Springdale. Any changes in the water supply system would be consistent with the

Zion National Park Water Rights Settlement Agreement.

Park Carrying Capacity and Visitor Use Management Strategies

The National Park Service has long recognized the need to apply the carrying capacity concept to areas under its jurisdiction. The National Parks and Recreation Act of 1978 (Public Law 95-625) requires that general management plans establish a visitor carrying capacity for each national park system unit. This plan provides a basis for and a management framework to begin to address Zion's carrying capacity.

The visitor experience and resource protection (VERP) framework addresses carry-

ing capacity and visitor use impacts on park resources and visitor experiences (NPS 1997d). Under this approach carrying capacity is defined as the type and level of visitor use that can be accommodated while sustaining resource and social conditions that complement the purposes of a park and its management objectives. In other words, carrying capacity is interpreted as a prescription of natural and cultural resource and visitor experience (social) conditions. Under the VERP framework, the park staff, with public input, determines desired resource conditions and visitor experiences in different areas of the park. A monitoring program is established to measure changes in resource and social conditions. From monitoring results, management actions are initiated to maintain desired conditions.

To address carrying capacity, this *General Management Plan* describes desired resource conditions and visitor experiences by management zone. The management zone prescriptions can be seen as setting qualitative carrying capacities for the park — the zones prescribe the appropriate range of visitor uses, resource conditions, developments, and management in each area of the park. However, there are three more integral elements (described below) in the VERP framework, which will be addressed fully in the wilderness management plan and carrying capacity studies to be completed within five years (as described under the "Future Planning and Research Needs" section).

- For each zone indicators and standards are selected. Indicators are specific, measurable variables that can be monitored to determine the quality of natural and cultural resource conditions and visitor experiences. Standards identify the minimum acceptable conditions for each resource or social indicator — the standards indicate when management actions are merited.

- The next element of the framework is long-term monitoring of the indicators. The indicators are systematically monitored in the zones to determine the conditions of resources and visitor experiences. Effective monitoring of resource and social indicators provides the feedback and documentation needed to implement meaningful management action. Monitoring documents if and when a management action is needed to keep conditions within the standards. (Monitoring would be an ongoing task starting with the implementation of this plan. Monitoring needs would be further analyzed as part of the future wilderness management plan and carrying capacity studies.)
- The final element is management action. Management action(s) are taken if resource conditions or visitor experiences are out of standard or monitoring indicates a downward trend in the condition of the resources or visitor experiences. (Proactive management action would be an ongoing task starting with the implementation of this plan. See the "Park Policies and Practices" chapter regarding methods that may be used.)

Resource indicators and standards have not yet been set for Zion. Although few formal studies exist documenting resource impacts and impairment in much of Zion due to visitor use, impacts such as soil compaction, erosion, and trampling of vegetation are frequently observed. In addition, other park resources, such as bighorn sheep, are known to be highly susceptible to disturbance. If use levels increase, there is concern that additional resource impacts may occur in the park. Thus, this alternative emphasizes monitoring in the front and backcountry to determine resource baselines and trends. The carrying capacity and wilderness management plans would

identify which indicators should be monitored and when and where they should be monitored.

Preliminary Carrying Capacities. Until the wilderness management plan and carrying capacity studies are completed, many of the existing visitor use management policies described in the no-action alternative would remain in effect. Several carrying capacities already have been set for areas exhibiting resource damage and crowding, such as in the Narrows from the northern park boundary down through Orderville Canyon, and the Left Fork of North Creek. Through the operation of the shuttle system visitor use levels are somewhat regulated in the main Zion Canyon. The shuttle system has eliminated much of the vehicle congestion and parking problems — one of the primary carrying capacity problems in Zion Canyon.

Increasing visitor use levels would drive the need to set quantitative carrying capacities in the frontcountry. Current (2000) visitor use levels are consistent with the zone conditions. However, as use levels increase there is concern that resource and visitor experience impacts will increase. To address these concerns, carrying capacity studies would establish baseline conditions and identify indicators and standards for the transition, frontcountry high development, and frontcountry low development zones. Monitoring would be done to identify trends in these zones.

This plan sets interim carrying capacities for hikers and saddle stock groups in the primitive and pristine zones. Group sizes and encounter rates with other groups would largely determine the carrying capacities for these zones. In the research natural area zone, interim group size limits have also been set for authorized research and educational groups.

Group Sizes and Encounter Rates

The group size limits in the primitive and pristine zones have changed in the final plan. In both zones the current backcountry group size limit of 12, which has been in place since about 1982, would continue as an *interim* limit until the wilderness management plan and carrying capacity studies were completed. While a substantial body of scientific literature exists regarding the effects of group size on resources and visitor experiences (see Manning (1999) and Hammitt and Cole (1998)), information specific to Zion is limited. Information collected through the carrying capacity studies during the development of the wilderness management plan should assist park managers in setting appropriate group size limits for the primitive and pristine zones. It may be necessary to impose stricter group size limits than the current limit to meet the desired future conditions for the two zones as described in this plan.

With regard to visitor encounters, the continued growth in backcountry use requires some proactive action now to ensure that resource integrity and the quality of visitor experiences are maintained. Limiting group encounters is one way to ensure that the desired conditions for the primitive and pristine zones are met. The encounter limits proposed in the plan are consistent with encounter rates in other wilderness areas across the country. Like the group size limits, they are labeled as *interim* limits because additional research, specific to Zion, is needed to determine if these limits are sufficient for protecting resources and ensuring quality visitor experiences in the primitive and pristine zones. The future wilderness management plan would reexamine the encounter rates and modify them if appropriate.

Prior to completion of the wilderness management plan, park managers may institute other interim group sizes or encounter rates in specific areas to address resource damage or visitor safety concerns.

The primitive and pristine zone carrying capacity numbers listed below are labeled as interim pending further research to determine if these limits are sufficient for protecting resources and ensuring quality visitor experiences in these zones. The future wilderness management plan would re-examine and modify these carrying capacities if appropriate. As with all the other zones, additional limits could be imposed in specific areas or at certain times if necessary to protect resources.

- **Primitive Zone — Hikers.** The *interim* hiker group sizes for day and overnight use would be limited to 12 or fewer individuals. The *interim* encounter rate would be generally no more than 12 groups encountered per day on any one trail in the zone. These are consistent with the zone prescription that calls for a moderate sense of solitude. Twelve encounters per day is a somewhat higher limit than many wilderness areas in the West, but it is not inconsistent with encounter standards that have been set elsewhere (see Manning 1999). In addition, Zion's rugged backcountry confines most use to existing trails and routes. The great majority of people in the recommended wilderness area use these trails, which would be zoned as primitive. Thus, higher encounter rates would be expected than might be the case in other wilderness areas where use is not as confined due to topography.
- **Primitive Zone — Saddle Stock.** Saddle stock would continue to be permitted on designated trails. Off-trail use of saddle stock would continue to be permitted only in the lower Coalpits Wash from the trailhead to the junction with Scoggins Wash, Scoggins Wash itself, and Huber Wash where the surrounding terrain confines use to the wash bottom. Overnight camping would be permitted only at the designated
- saddle stock site in Hop Valley, with a group permitted to stay one night. Excluding the trail ride concessioner, the *interim* saddle stock group size limit would be a maximum of six people per group with six saddle stock. These numbers are consistent with current park regulations. The *interim* encounter rate limit would be set at no more than one other saddle stock group encountered per day. This would ensure that large numbers of saddle stock would not be present along any one trail at any one time and would therefore avoid impacts to resources and other users.
- **Pristine Zone — Hikers.** The *interim* hiker group size limit for day and overnight use would be 12 people. The *interim* encounter limit would be set at zero; visitors would usually not expect to encounter other groups in the zone. These numbers are consistent with the zone prescription, which calls for a high sense of solitude. Zero encounters is a relatively low limit compared to other wilderness areas, but it reflects the rugged, largely inaccessible terrain comprising this zone: one would not expect to find another group throughout a majority of Zion's rugged and remote areas.
- **Pristine Zone — Saddle Stock.** Saddle stock would not be allowed within the pristine zone. With the exception of upper Coalpits Wash above the springs, this is consistent with park regulations, which are intended to prevent soil erosion, vegetation trampling and denudation, and to avoid impacts to sensitive resources such as microbiotic crusts, riparian habitat, and archeological sites.

Carrying Capacity Data Needs. Based on an indepth study of the park's information (Vande Kamp 1998), the following are the highest carrying capacity social data needs for the park:

- accurate counts of the number of visitors (and groups of visitors) who are currently using specific areas in Zion's recommended wilderness
- the number of encounters experienced by current visitors
- visitor evaluations of social conditions (such as numbers of encounters with other visitors)
- the number of parties camped within sight or sound of current overnight campers
- information about specific sites and activities where the presence of other visitors most clearly detracts from experience quality (e.g., "bottlenecks")
- the characteristics of visitors found at various sites in Zion's recommended wilderness
- changes in visitor use patterns because of the Zion Canyon shuttle system

With regard to carrying capacity, natural resource data needs, the planning team has identified several potential natural resource indicators for Zion.

- number, width, and depth of active social trails
- streambank profiles in riparian areas
- percent groundcover
- percent microbiotic soils
- vegetation species composition
- soil compaction
- soil bacteria, nematode, and fungi community composition

These indicators are appropriate for Zion because the indicators respond rapidly to human disturbance and they measure impacts directly related to human disturbance. The wilderness management plan and carrying capacity studies would establish a monitoring program and standards for some or all of these indicators in different areas of the park.

Other indicators and standards for key natural and cultural resources might be appropriate in Zion, but additional data would be necessary to determine if there are correlations between human activity and resource conditions. Some of the possible natural resource indicators include:

- Mexican spotted owl
- reactions to human activity in nesting areas
- Desert bighorn sheep reaction to human activity in key habitat
- a relationship between visitor river use and Virgin spinedace and aquatic invertebrates
- a relationship between visitor river use and water quality
- desert bighorn sheep reactions to human activity in key habitat
- a relationship between visitor river use and Virgin spinedace and aquatic invertebrates
- a relationship between visitor river use and water quality
- Peregrine falcon roosting and nesting activities in relation to rock climbing
- mountain lion behavior/activity in visitor
- visitor use areas

- quality of visitor experience relative to natural and human-generated sound levels
- the tolerance of Zion snails and hanging garden plants to human activity

Strategies for the Levels and Types of Park Development

All of the strategies described under the "Park Policies and Practices" chapter regarding development in the park would apply in the preferred alternative. The National Park Service would build the management facilities called for in the 1994 *Development Concept Plan, Zion Canyon Headquarters* (NPS 1994b). In addition, the Park Service would pursue several additional strategies regarding new development in the park. These strategies are intended to minimize new developments within the park, and encourage the construction of visitor facilities outside the park.

- No new camping facilities would be built in Zion's frontcountry areas, including campgrounds, campsites, or infrastructure (e.g., roads, utilities, tables, fire rings). This includes areas in Zion Canyon, along the Kolob Canyons and Kolob-Terrace Roads, Lava Point, and along the Zion-Mt. Carmel Highway. In addition, picnic areas would not be converted into campgrounds.
- New picnic sites might be built only in previously disturbed areas at selected trailheads or pullouts throughout the park and at the Kolob Canyons visitor center.
- No new food service buildings would be constructed in the park.
- No new lodging would be provided.
- No new roads would be built in the park, except possibly for short access roads to park facilities. The National Park Service

would continue to coordinate and cooperate with the county with regard to maintenance of the Kolob-Terrace Road.

- Park workers would continue to staff collection stations and collect associated entrance fees on the south and east boundaries of the park (along the Zion-Mt. Carmel Highway), and at Kolob Canyons. In addition, the National Park Service would study the feasibility and advantages of establishing an entrance/fee collection station along the Kolob-Terrace Road.
- The Park Service would work with adjacent landowners, Kane County, and other organizations to locate a space outside the east boundary of the park to provide information to visitors.

Zion Canyon Lodge Strategies

Under the preferred alternative, the National Park Service would follow the same desired conditions and strategies for the Zion Lodge as under the no-action alternative. Park managers would continue to work with the concessioner to ensure that the quality of the services appropriate to the historic experience was maintained. The commercial services implementation plan would provide more detailed guidance on operation and administration of the lodge, and thus ensure that management of the lodge was consistent with desired conditions for this area (see also the "Visitor Use Strategies").

Desired Conditions and Strategies for the Management of the North Fork of the Virgin River

New desired conditions and strategies for the North Fork would apply under the preferred alternative, which differ from those described in the no-action alternative. In particular, the two alternatives differ in the

approaches to visitor use management and the restoration of the floodplain. Restoring parts of the river would be an important step in preserving the dynamic processes that formed Zion Canyon and would maintain and restore habitat for riverine and floodplain species.

- **Desired Conditions:** The North Fork continues to provide high quality experiences for visitors. Visitor use levels and activities are consistent with park purposes — visitors enjoy the river without impairing resources. Conflicts between users are minimal. The river's water quality and natural biological community are enhanced or maintained. Portions of the channel of the North Fork, particularly in the vicinity of Zion Lodge, are restored to a more natural morphologic condition, considering such factors as width/depth ratios, gradients, riffle and pool structure, sinuosity, and hydrologic connection with its floodplain. Floodplain habitat conditions are also restored through additional measures, including management of exotic plants and wildlife, protection and planting of native flora, and education of visitors.

- **Strategies:** The National Park Service would develop a river management plan(s) to address important water resource issues in the park, including visitor uses and the restoration of sections of the North Fork's floodplain. Actions would be consistent with management zoning and with the recommended classification of the river below the Temple of Sinawava as recreational under the Wild and Scenic Rivers Act.

The river management plan would examine different strategies and actions for managing river uses (e.g., use levels, timing of use, educational efforts) to

protect riparian and riverine resources and ensure continued visitor enjoyment of the river. Actions considered as part of this plan could include designating river access points, allowing river recreation only at times when the potential for resource damage or safety hazards was low, and limiting the number of visitors.

Restoring part of the North Fork could be addressed in the river management plan. This plan would:

- identify objectives for any river restoration effort (e.g., the "natural" conditions that constitute a restored river, given its zoning and wild and scenic river status)
- indicate information needs (e.g., identification of the locations of all park infrastructure in or near the river floodplain, analysis of relocation and protection costs)
- identify and assess alternative approaches for restoring the river
- determine when, where, and how the river would be restored

The plan would examine the removal of levees and riverbank-protection structures (revetments) dating back to the 1920s that prevent the river from using the floodplain. These structures are primarily in place near the Zion Lodge. Park managers would evaluate alternative restoration approaches, ranging from allowing levees to slowly deteriorate over time to removing the levees, along with their effects on flood safety, floodplain resources, visitor use, and costs. Depending on the approach selected, the desired condition would be achieved in varying time spans.

Park managers also would evaluate other in-stream structures located between the

Temple of Sinawava and the southern park boundary, such as gabions, pipeline crossings, and cemented boulders, for their potential removal or replacement with more biologically, hydrologically, and aesthetically sensitive treatments. River diversion structures associated with the water rights of the National Park Service and Springdale would remain in place. The plan would need to include an examination of how restoration efforts could affect visitor access to the river and its floodplain and the potential impacts on the existing park infrastructure.

Visitor safety would be a primary consideration in planning any restoration of the North Fork. Since most park facilities are concentrated along the eastern edge of the floodplain, they can be protected while the river is allowed to use the remainder of the floodplain. In particular, the lodge and the Zion Canyon Scenic Drive would continue to be protected from flooding.

ZONE ALLOCATIONS AND RELATED ACTIONS

The Preferred Alternative map shows how the different management zones would be applied throughout the park. The map shows the zones as both large polygons and as narrow corridors that follow trails, routes, and drainages. It should be noted that this zoning map shows how private inholdings and other lands with private water and mineral rights within Zion National Park would be managed if they were acquired in the future. Until the private rights (as shown on the Wilderness Recommendation and Land Status map) were acquired or relinquished, the National Park Service would recognize that the inholdings were private lands and would respect the valid rights of

the landowners and mineral and water right owners.

Pristine zones would cover most of Zion, about 81% of the park. Primitive areas would cover about 11% of the park, primarily in the Taylor Creek area, the area around Lava Point and Horse Pasture Plateau, the slopes of lower Zion Canyon, and the majority of trails in Zion's backcountry. Although most of the park's backcountry would be primitive or pristine zones where use levels would be low, much of the backcountry is not accessible to most visitors due to the park's steep topography (see the "Access to the Backcountry" section in the Affected Environment part). These zones would be consistent with most of the park being recommended as wilderness and with use levels the backcountry is likely to receive in the future.

Under the preferred alternative, about 6% of the park would be research natural areas, including Goose Creek, Parunuwap, upper Shunes Creek, Crazy Quilt, the slickrock area adjacent to Gifford Canyon, the southeast corner of the park, and several isolated mesa tops and hanging gardens.

The transition, frontcountry, and administrative zones would be in readily accessible areas. Transition zones, covering about 1% of the park, would encompass the floor of Zion Canyon adjacent to the scenic drive, Sand Bench trail, the Weeping Rock trail, Canyon Overlook and Watchman trails, Emerald Pools trail, Court of the Patriarchs trail, the Hidden Canyon trail up to the mouth of the canyon, and the West Rim trail from the canyon floor up to Scout Lookout, and Angels Landing. The Narrows from Orderville Canyon south to Mystery Canyon, Timber Creek Overlook trail, and Observation Point trail would be designated as special transition zones (see "Recommended Wilderness" section). Frontcountry high development zones, encompassing about

0.4% of the park, would include the south park entrance, the Zion Canyon Scenic Drive to the Temple of Sinawava, the Zion-Mt. Carmel Highway, and the entrance to the Kolob Canyons. About 0.5% of the park would be designated frontcountry low development zones, including the Kolob Canyons Road, Kolob-Terrace Road, Smith Mesa Road, Lava Point, and the east entrance. Administrative zones would comprise about 0.2% of the park, primarily in maintenance and employee housing areas and near the entrances to the Kolob Canyons and Lava Point.

The pristine, primitive, and research natural area zones would primarily lie within the recommended wilderness area. However, several of these zones, totaling 8,203 acres (about 5% of the park), would lie outside the recommended and potential wilderness areas. These areas include the area south of the powerline corridor in the Coalpits area; an area above Lava Point, north of the roads to the MIA camp; an area west of the Kolob-Terrace Road by the Smith Mesa Road; and several areas near the Kolob Canyons, Kolob-Terrace, and Zion-Mt. Carmel Roads. These pristine, primitive, and research natural areas would be managed the same way as the zones are managed in the recommended wilderness area.

The remainder of this section describes more specifically how different areas of the park would be zoned and the actions that could occur under the preferred alternative. The actions are those the planning team believes to be the most likely to take place over the next 20 years in the park, given the zone definitions, what already exists in the park, and the park's environmental constraints. Where possible, any proposed new development would be built in already disturbed areas, and mitigation measures would be taken to avoid sensitive areas, such as threatened and endangered species habitat and archeological sites.

Frontcountry Areas

Kolob Canyons Road Area. The entrance area would be a frontcountry high development zone. Actions that might be taken in this area include expanding the existing Kolob Canyons visitor center, adding parking, and possibly developing an outdoor exhibit area/plaza, an associated picnic area, and a nature trail.

The Kolob Canyons Road itself (the road corridor from the entrance gate to the Timber Creek Overlook) would be a frontcountry low development zone. If traffic in this area increases in the future, park staff would take action to ensure that the opportunity for visitors to have a rural experience was maintained, such as by limiting the number of private vehicles or offering a shuttle to transport visitors. No expansion of facilities would occur along the road other than the possibility of installing restrooms. Parking spaces at the trailheads for the Middle and South Forks of Taylor Creek and the Lee Pass trails would have to be reduced to reflect trail-use capacities. (These trails are all zoned primitive.)

The Timber Creek Overlook trail would be managed as a special transition zone since it lies within the recommended wilderness area. It would be maintained to meet wilderness requirements but would allow higher use levels than the majority of the recommended wilderness (see the wilderness management section).

The area to the north of the entrance, which includes employee housing, a maintenance shed, and water collection tanks, would be an administrative zone. This would allow managers to make improvements to support the possible increase in visitor services and facilities in this area. Particular actions that park managers could take in this area include adding administrative offices and/or maintenance facilities.

Kolob-Terrace Road Area. The portion of the Kolob-Terrace Road corridor within the park would be a frontcountry low development zone. If visitor numbers increased here in the future, actions would be taken to ensure that a rural setting was maintained (e.g., offer a shuttle to transport visitors).

Within the limited space available, existing trailheads could be improved (e.g., restrooms installed), but no new trailheads would be built. The improvements could include adding a few picnic sites in the already disturbed areas at the Hop Valley and Wildcat Canyon trailheads.

With the agreement of the Bureau of Land Management (BLM), the Park Service would build a focused visitor facility/ranger residence/office and restrooms on BLM lands near the park boundary at North Creek. The staff at this facility would provide visitors with park information, visitors issue permits, possibly collect fees, and establish a Park Service presence on this side of the park. (Park managers would prepare a site plan and assessment of the environmental impacts of this facility at a later time.)

The existing Firepit Knoll administrative area and its associated access road would be a pristine zone. The ranger residence and road would not be consistent with the desired conditions of the pristine zone. Thus, once the new focused visitor facility/ranger residence on the Kolob-Terrace Road was built, the Firepit Knoll ranger residence and its access road would be removed and the area restored to natural conditions.

Northeast of Virgin, the Park Service would remove the existing Dalton Wash/Crater Hill parking area. This area needs to be removed because it lies within the 1978 wilderness recommendation.

Lava Point Area. Most of this area, which includes the Lava Point campground and

picnic area, as well as the road to the West Rim trailhead, would be a frontcountry low development zone. If visitor numbers increased, actions would be taken to ensure that opportunities for visitors to have a rural experience were still available, such as by limiting the number of private vehicles or offering a shuttle to transport visitors.

The road east of the gate at the West Rim trailhead, including all three forks leading onto private land outside the park, would be an administrative zone. This zoning would allow continued motorized access by administrative vehicles, the private landowners, and their guests. The area to the north of the entrance also would be an administrative zone to support management of this part of the park. The existing Lava Point ranger residence would be replaced with a new structure that met NPS standards.

South Entrance and the Main Zion Canyon Area. This area of the park would be a mix of frontcountry high development, primitive, pristine transition, and administrative zones.

The areas zoned frontcountry high development would include the road corridor from the south entrance to the Temple of Sinawava, including much of the Zion Canyon Lodge area (parking lots, lodging facilities, and restrooms). Most of the south entrance area itself (including the campgrounds, the segment of the Pa'rus trail through the campgrounds, the Zion Canyon visitor center, and the Zion Museum) would be frontcountry high development zones. In these areas park staff could add picnic sites in disturbed areas.

Most of the canyon bottom on either side of the road corridor, including the segment of the North Fork of the Virgin River north of the campgrounds to the junction with Orderville Canyon, would be transition

zones. Trails and routes that would be transition zones include:

- the segment of the Pa'rus trail extending north of the campgrounds
- the Watchman and Sand Bench trails
- the lower, middle, and upper Emerald Pools trails
- a segment of the West Rim trail from the canyon bottom to Scout Lookout
- the trail to Angels Landing
- part of the Hidden Canyon trail from the trailhead at the parking lot to the mouth of Hidden Canyon where the designated trail ends
- Weeping Rock trail
- the Observation Point trail from the trailhead at the Weeping Rock parking lot to Observation Point
- Riverside Walk
- the Narrows from the southern end of the Riverside Walk to the junction of Orderville Canyon

Bicycling and saddle stock use would not be permitted except for trails where the uses are currently allowed (i.e., bicycling on the Pa'rus trail, and horseback riding on the Sand Bench trail). The portion of the river zoned transition would need to be restored, as per the desired conditions/strategies discussed earlier, but the level of restoration could vary from simple to complex — the zoning would not require specific restoration actions. No other management actions would be necessary to ensure that these areas were consistent with transition zone conditions. Outside of wilderness, park staff could upgrade trails to higher standards to better meet zone conditions, however.

The Observation Point trail and the lower Narrows from Orderville Canyon south to Mystery Canyon would be managed as

special transition zones since they lie within the recommended wilderness area. They would be maintained to meet wilderness requirements but would allow higher use levels than the majority of the recommended wilderness (see the wilderness management section).

Several areas would be administrative zones, including: Sammy's Canyon (site of the shuttle maintenance facilities), the Watchman employee housing area, the old waste treatment plant, the Oak Creek employee housing and maintenance area, the Pine Creek employee housing area, the Birch Creek concessioner support facilities, water collection structures at springs in Zion Canyon, and concessioner support facilities around the Zion Canyon Lodge. No additional actions would be considered at this time beyond what was discussed under the no-action alternative and in "Park Policies and Practices." Any future development would be accomplished in a manner consistent with the zone descriptions.

East Entrance and the Zion-Mt. Carmel Highway Area. The road corridor and east entrance area would be frontcountry high development zones. No new trails or visitor facilities would be provided along the road corridor, with the possible exception of a few restrooms, picnic sites, and associated parking spaces in disturbed areas at existing pulloffs along the road. Pulloffs along the road that are contributing to unacceptable resource damage would be removed and rehabilitated. In addition, depending on the recommendations of the carrying capacity studies and transportation plan, a voluntary shuttle system may be initiated to better transport visitors to this area and reduce parking congestion.

The short access road to the East Rim trailhead and an area north of the east entrance would be frontcountry low development zones. The trailhead could be improved by

formalizing parking and adding picnic sites and a restroom.

The Canyon Overlook trail would be a transition zone. Park staff would continue to prohibit bicycling and horses on this trail due to safety concerns. Actions that could be taken in this area include adding more interpretive signs along the trail and improving the parking area to address safety concerns.

Just outside the recommended wilderness, on the park's eastern boundary, the East Rim trailhead would be a frontcountry low development zone to provide for trailhead parking.

The existing employee housing area and water collection tank at the east entrance would be an administrative zone.

Recommended Wilderness

Under the preferred alternative, the park staff would continue to manage a total of 132,615 acres (about 90% of the park) as wilderness, the same as the no-action alternative (see the Recommended Wilderness and Land Status map on page 53). This is consistent with the 1978 wilderness recommendation, with a few changes that reflect the acquisition of inholdings, state surface ownership and mineral rights, grazing rights, and water rights since that time. (The acreage figures also differs from the 1978 figures due to the inclusion of a valid existing water right on Camp Creek that had been overlooked in 1978, and due to the use of more accurate geographic information system maps.) In recognition of valid private rights, an additional 4,175 acres (3% of the park) would continue to be administered as potential wilderness — lands that currently do not qualify for wilderness designation due to

nonconforming or incompatible uses (e.g., private inholdings, private water rights). If and when these rights were relinquished or acquired, the potential wilderness would either become part of the wilderness recommendation or be included as designated wilderness.

Recommended wilderness would primarily be zoned as pristine, primitive, or research natural areas.

Primitive Zones. The primitive zone would apply to 13,602 acres in the recommended wilderness, including numerous trails and routes. (An additional 18 acres of potential wilderness would be included in this zone.) To meet desired zone conditions, on occasion managers might need to limit or reduce visitor numbers on the Narrows route from the northern park boundary to the junction with Orderville Canyon, Orderville Canyon itself, the Middle Fork of Taylor Creek, and La Verkin Creek trail. In the future, managers may need to place limits on visitor use elsewhere in the primitive zones if visitor use levels increased to the point where desired conditions were not being met.

Visitor access may be improved in a few areas within the primitive zones. Visitor access could be improved in areas that were able to withstand increased human use (e.g., areas where there are no spotted owls or other sensitive species habitat). The topography of the areas adjacent to Lava Point and Wildcat Canyon, and on the Horse Pasture Plateau would be most conducive to improved access by the upgrading of existing trails and routes in these areas. Designated campsites in areas outside spotted owl protected activity centers could also be established. On the other hand, no new trails would be established along either side of the Zion-Mt. Carmel Highway due to the sensitivity of the resources in this area.

Summary of Interim Visitor Use Limits

Visitor use limits pertaining to hikers would not be imposed in the frontcountry high and low development zones and the transition zone, unless resource or visitor safety conditions warrant action or carrying capacity studies determine there is a need to protect resources or visitor experiences. (For saddle stock interim use limits, see the text box on page 73.) The primitive, pristine, and research natural area zone conditions would limit the number of people who could enter these areas.

In the primitive zone, interim group sizes for day and overnight use would be 12 or fewer individuals. No more than 12 groups generally would be encountered per day in the zone.

In the pristine zone, the interim group size would be no more than 12 people. Visitors would usually not expect to encounter other groups in the zone.

In the research natural area zone, the interim group size for authorized research and guided educational group sizes would be limited to no more than 12 people, and recreational use would be prohibited.

Pristine Zones. The Park Service would apply the pristine zone to 110,083 acres in the recommended wilderness, which would include a number of known routes. (An additional 4,023 acres of potential wilderness would be included in this zone.) In general, existing conditions already meet the undeveloped, very low use nature of this zone. However, to ensure the probability of encountering no other people, managers may need to limit or reduce visitor numbers on sections of the following routes: Camp Creek, Willis Creek, Beartrap Canyon, Right Fork of North Creek, upper Coalpits Wash above the junction with the Chinlee Trail, Dalton Wash, upper Hidden Canyon, and Mystery Canyon. In the future, managers might need to place limits on visitor use elsewhere in the pristine zones if visitor use levels increased to the point where desired conditions were not being met.

There may be areas zoned pristine under this alternative that do not meet desired conditions. In such cases, park managers would remove the evidence of human use and restore these areas to natural conditions when feasible. Bolts on climbing routes and either national register-eligible or listed resources, including historic structures, would remain. These areas would be restored either by letting the areas naturally recover or by taking active measures such as planting native vegetation.

Transition Zones. Ordinarily, transition zones would not be compatible with recommended wilderness. However, three areas within the 1978 recommended wilderness area all receive higher use levels than other trails in the recommended wilderness: the Timber Creek Overlook trail, the Observation Point trail, and the Narrows from Mystery Canyon to the mouth of Orderville Canyon. In recognition of their higher use levels, these three areas would be designated as special transition zones: the areas would be managed consistently with wilderness, but use levels would be permitted to be higher than in other zones in the recommended wilderness area.

Research Natural Areas

Research natural areas are integral to management and long-term monitoring of park resources. They serve as baseline reference areas to compare and assess the condition of more intensively used areas of the park. In addition, research natural areas protect significant examples of natural and cultural resources from impacts of recreational use and provide opportunities for long- and short-term research within areas mostly unaffected by human activities. As such, research natural areas serve as important sources of information for broader management decisions affecting park resources and visitor use.

Under the preferred alternative the three existing research natural areas would be deauthorized. These areas were poorly documented at the time they were established and do not specify the primary ecological components or processes to be studied and protected. Additionally, their boundaries were rather subjective and were poorly defined ecologically or administratively, making their management difficult. As a result, these research natural areas have mostly been ignored in park management since their designation. In some areas this resulted in uses that were inconsistent with their research natural area designations.

Because the planning team has determined that well-managed and ecologically defined research natural areas are essential to achieve the purposes of Zion National Park, new research natural areas would be designated in this alternative. (See the text box on page 74 for an explanation of how these areas were selected.) Several of the proposed research natural areas are more ecologically specific areas derived from the three existing research natural areas that would be deauthorized. The new areas also are more suitable and possess a greater variety of ecological communities than the currently designated research natural areas. These are areas that park staff could manage more consistently with the intent of the research natural area network.

Under the preferred alternative the research natural area zone would be applied to the new research natural areas. The zone would cover 9,013 acres, which would make up about 6% of the park. Most of the research natural areas (8,893 acres) would be in the recommended wilderness; another 134 acres of potential wilderness would be included in this zone. The research natural areas in the preferred alternative would include undisturbed watersheds and riparian corridors (Parunuweap, Goose Creek, upper Shunes Creek), some isolated mesa tops (e.g., Burnt

Summary of Saddle Stock Use Management

- Saddle stock are limited to horses, mules, and burros.
- All Zion Canyon trails from the rim down (with the exception of the Sandbench trail), Kolob Arch trail, Willis and Beartrap Canyons, the East Mesa trail below the junction with the Observation Point trail, the Taylor Creek trail, and Timber Creek Overlook trail would continue to be closed to all saddle stock.
- Saddle stock use on authorized backcountry trails in the primitive zone would continue to be prohibited during spring thaws, during unusually wet periods, and at other times when their use would cause undue trail damage.
- Off-trail use of saddle stock in the primitive zone would continue to be permitted only in the lower Coalpits Wash from the trailhead to the junction with Scoggins Wash, Scoggins Wash, and Huber Wash.
- In the primitive zone there would be an interim limit on group size: a maximum of six saddle stock and six people would be permitted per group.
- In the primitive zone there would be an interim encounter rate limit: no more than one other stock group could be encountered per day.
- In the primitive zone, overnight camping with saddle stock would be permitted only at one designated campsite in Hop Valley. A group would be permitted to stay at this campsite only one night.
- In the pristine zone no saddle stock would be allowed in order to avoid impacts to sensitive natural and cultural resources and other visitors.

Mountain, Greatheart Mesa, Inclined Temple, Crazy Quilt), selected hanging gardens in Zion and Parunuweap Canyons (e.g., near Grotto Spring, Weeping Rock, and North Menu Falls), a representative area of slick rock between the Zion-Mt. Carmel Highway and Parunuweap Canyon, and a relict piñon-juniper forest in the southeast corner of the park. (See appendix I for a list of all of the research natural areas that would be designated under the preferred alternative, along with a description of the attributes of these areas.)

The research natural areas would be open only to authorized research and NPS-guided educational trips — recreational use would be prohibited. Actions park managers could take in this zone include:

- providing offsite interpretation on the values of these areas
- allowing minimal trail and campsite construction if essential to provide access to temporary research equipment (e.g., access to a temporary water gauging station)
- installing temporary research equipment if no practical alternative exists for achieving research goals and where consistent with the Wilderness Act

PROPOSED BOUNDARY ADJUSTMENTS AND EASEMENTS

The National Park Service would propose several boundary adjustments and the acquisition of access and conservation easements in this alternative. Congressional authorization would be required for the National Park Service to pursue the boundary adjustments and to acquire easements on private lands.

Selection of New Research Natural Areas

To select areas to be designated as research natural areas, the process described in the NPS "Natural Resources Management Guideline" (NPS 1990) was followed, incorporating resource data from the park geographic information system and other databases and from information provided by interested scientists and the public. The analysis of resource sensitivities and values, using the geographic information system, is described in appendix E. The new research natural areas were selected to represent and include important physical processes, biological species and communities, and cultural resources within landscapes of applicable size to allow them to be affected primarily by natural forces. Therefore the new research natural areas range in size from less than an acre in the case of protecting a hanging garden vegetation community to more than 1,000 acres to study the hydrologic and geologic processes at work in a slickrock watershed. Landscape units were selected that contain outstanding examples of several ecological units and multiple resource attributes.

Under section 604(b)(4) of the National Parks and Recreation Act (PL 95-625), Congress specifically directed the National Park Service to identify proposed boundary adjustments in park general management plans. The Park Service would propose boundary adjustments for Zion National Park through land transfers from the Bureau of Land Management. The map on page 77 shows the general locations of these boundary adjustments. The planning team has determined that all of the proposed boundary changes satisfy the NPS criteria for boundary adjustments. (The evaluation of the boundary proposals and easements is on file at park headquarters.)

The proposed boundary adjustments also must meet the requirements of Public Law 101-628. Section 1216 requires an evaluation of each proposed addition, including an assessment of the impact of the boundary adjustment. Section 1217 requires the

National Park Service to consult with others on the proposal, to estimate the cost of acquisition, and to identify the relative priority for acquisition of each parcel. This plan does not address these legislative requirements; however, the legislative proposal and accompanying support materials that are submitted to Congress would address these requirements.

BLM Land Transfers

The National Park Service would propose four BLM wilderness study areas adjacent to Zion, totaling 640 acres, to be included in the park boundary (see the Proposed Park Boundary Adjustments and Adjacent Landownership map). These areas include: Watchman (480 acres); Middle Fork of Taylor Creek (40 acres); Beartrap Canyon (40 acres); and the southern part of the Goose Creek area (80 acres).

These parcels are small, isolated areas managed by the Bureau of Land Management. The boundary changes would bring into the park the heads of canyons or incorporate complete drainages and other prominent features that visitors already associate with Zion. The changes also would enable park staff to manage all of the subject canyons, provide increased protection for other natural and cultural resources in the park (e.g., Mexican spotted owl habitat), provide visitors with additional challenging hiking opportunities, and promote more efficient management of the areas. These land transfers would be consistent with the recommendations in the *Dixie Resource Area Resource Management Plan* (BLM 1998).

It would be the intention of the National Park Service to administer and protect the proposed BLM wilderness study area acquisitions in keeping with NPS *Management Policies* and *Director's Order 41* (Wilderness Preservation and Management).

In keeping with established guidelines, the National Park Service would subsequently initiate the administrative process needed to recommend to Congress the addition of these units to the national wilderness preservation system as either NPS "designated" or "potential" wilderness.

In addition to these areas, the Park Service would propose approximately 311 acres on the adjacent Rockville Bench for transfer to the park. The boundary adjustment would preserve the park's scenic qualities, eliminate or mitigate impacts on its natural and cultural resources, and promote more efficient management of the park. Thus, the proposal would satisfy the NPS criteria for boundary adjustments. Both the Bureau of Land Management and the town of Rockville would be amenable to this land transfer. The Park Service and Bureau of Land Management would enter into an interim memorandum of agreement for the Park Service to manage the tract until the proposed boundary adjustment is approved.

Acquisition of Access Easements

An easement is an interest in property restricting certain uses of land or giving a right to another entity to make limited use of the land. An access easement gives the public a right to pass through a property owner's land. All current and future owners of the land would be legally bound to follow the provisions of the easement agreement.

The National Park Service would seek nine access easements, totaling approximately 15 miles, on lands outside the park boundary (see the Proposed Park Boundary Adjustments and Adjacent Landownership map). The easements include:

- the North Fork of the Virgin River/Virgin River Narrows (3 miles)
- Orderville Canyon (0.25 mile)

- Ponderosa Ranch area (two separate easements, totaling 3 miles)
- Anasazi Plateau (1.3 miles)
- Camp Creek (1 mile)
- Horse Ranch Mountain area (three separate easements totaling 6.5 miles)

The Park Service believes the easements would ensure that visitors and park personnel continue to have access in perpetuity to relatively inaccessible parts of the park. Several of the easements provide access to existing trailheads and popular routes. Without these easements, visitor access could be severely restricted and park managers would not be able to adequately protect and preserve park resources or complete resource management projects and studies in remote parts of the park.

Acquisition of Conservation Easements on Adjacent Private Lands

As noted in "Affected Environment," private lands about Zion's boundary in many locations. Most of these areas are undeveloped, but several landowners are developing or are considering developments on their property. Developments or other uses on these parcels could adversely affect the scenic qualities of the park and visitor experiences. Three privately owned adjacent areas are of particular concern:

- the Kolob Terrace area south of Spendlove Knoll (1,500 acres)
- the Anasazi Plateau subdivision area east of the Rockville Bench (400 acres)
- parcels in the North Fork of the Virgin River near the northeast corner of the park (320 acres)

The National Park Service would seek legislative authority to acquire conservation easements for these areas and for other

potential areas near the park on a willing-seller basis, or would encourage local governmental entities or nonprofit groups to acquire these easements. These easements would benefit the landowners and would not remove any privately owned land from the tax rolls. In some cases as with the Anasazi Plateau subdivision, the landowner is able to cluster the new homes in the development and dedicate the remaining portion to an open space conservation agreement as provided for by Springdale's zoning ordinances.

PROPOSALS FOR WILD, SCENIC, AND RECREATIONAL RIVER DESIGNATION

As part of the planning process for Zion, a study was conducted to determine whether any of the rivers in the park and on six adjacent Bureau of Land Management river segments should be recommended for inclusion in the national wild and scenic rivers system. Appendix F contains this wild and scenic river evaluation. The planning team determined that five rivers and their tributaries would be eligible and suitable for inclusion in the system:

- the North Fork of the Virgin River above and below the Temple of Sinawava (two segments)
- the East Fork of the Virgin River
- North Creek
- La Verkin Creek
- Taylor Creek

In addition all six BLM segments evaluated were found eligible and suitable, with the exception of the upstream 1.7-mile segment of Shunes Creek from the Kane County line to the dryfall. All of these rivers and their tributaries would be proposed for wild, scenic, and recreational river designation

TABLE 1: PROPOSED CLASSIFICATION OF RIVERS IN ZION NATIONAL PARK AND ON ADJACENT BLM LANDS

River	Classification	River	Classification
North Fork of the Virgin River, above the Temple of Sinawava	Wild	North Creek	Wild
Kolob Creek (incl. BLM segment)	Wild	Wildcat Canyon	Wild
Goose Creek (incl. BLM segment)	Wild	Right Fork	Wild
Imlay Creek	Wild	Left Fork	Wild
Orderville Canyon	Wild	Grapevine Wash	Scenic
Deep Creek	Wild	Wolf Springs Wash	Scenic
Mystery Canyon	Wild	Pine Spring Wash	Scenic
North Fork of the Virgin River below the Temple of Sinawava	Recreational	Russell Gulch	Wild
Birch Creek Canyon	Wild	Little Creek	Wild
Pine Creek (excluding the segment below the lowest switchback west of the tunnel on Zion-Mt. Carmel Highway)	Wild	La Verkin Creek	Wild
Pine Creek (below the switchback to confluence with the North Fork Virgin)	Recreational		
Oak Creek	Recreational	Willis Creek (incl. BLM segment)	Wild
Heaps Canyon	Wild	Beartrap Canyon (incl. BLM segment)	Wild
Behunin Canyon	Wild	Current Creek	Wild
Echo Canyon	Wild	Cane Creek	Wild
Clear Creek	Recreational	Timber Creek	Wild
East Fork of the Virgin River	Wild	Hop Valley Creek	Wild
Shunes Creek (incl. BLM segment), excluding the segment from the water diversion to the western park boundary	Wild	Taylor Creek	Wild
Shunes Creek from the western park boundary to the water diversion	Recreational	North Fork	Wild
		Middle Fork From east of the park boundary along the Kolob Canyons Road for 1 mile	Scenic
		The rest of the Middle Fork (including the BLM segment)	Wild
		South Fork	Wild

under the preferred alternative. Table 1 lists the proposed classifications for the rivers and their tributaries. (Tributaries are listed beneath the main stems.) See the Wild and Scenic Rivers map for locations of the rivers and their tributaries.

The Zion National Park Water Rights Settlement Agreement provides comprehensive protection of Zion National Park rivers. The National Park Service would support Wild and Scenic Rivers authorizing legislation that recognizes this Agreement as constituting the reserved water rights for the park and does not reserve more water for the park than is provided for in the Agreement. In this way the National Park Service can honor its commitments made in negotiating the Agreement.

IMPLEMENTATION

Priorities and Funding

The National Park Service would implement new developments and management actions proposed under this alternative over the next 20 years as funding became available. The Park Service would establish partnerships with other agencies or groups to implement several actions described in this alternative. The management emphasis would shift under the preferred alternative, requiring a reallocation of staff among the different park programs.

Given adequate funding, the highest priority would be given to implement actions that serve the following functions:

- address crucial resource protection needs
- address visitor and employee safety concerns
- remedy serious infrastructure concerns
- accommodate immediate interpretation or visitor use needs

Priority actions also must be accomplished before subsequent steps are taken, and could be accomplished fairly quickly with relatively little time and money.

Future Planning and Research Needs

Park managers would prepare several "step-down" implementation plans and studies upon completion of the *General Management Plan*. These more detailed implementation plans would describe how the Park Service would achieve the desired conditions outlined in the *General Management Plan* by describing specific actions park managers intend to take in Zion to ensure that resources are protected, and visitors continued to have opportunities for high quality experiences. The Park Service would seek public input in preparing all of these plans and would prepare additional environmental documentation as needed to comply with the National Environmental Policy Act.

The highest priority implementation plan would be the wilderness management plan. Carrying capacity studies also would be done for the front and backcountry. (For details on the carrying capacity studies, see page 60.) These studies and plan would be completed within five years of the approval of the *General Management Plan*.

The wilderness management plan would address a variety of topics, either as plan components or stand-alone plans:

- carrying capacity: appropriate uses and use levels, including hikers and saddle stock use
- minimum requirement documentation: guidelines for the use of "minimum requirement" that apply to all administrative decisions within the recommended wilderness

- resource issues: other visitor and resource impacts, reservation systems, human
- waste, signs, resource monitoring, and fire management
- climbing/canyoneering: locations, use levels, and resource issues
- river management: strategies for managing water use in and from the park's recommended wilderness
- commercial guiding: whether or not commercial guiding should be allowed in the recommended wilderness, and if so how it should be managed

In addition to these follow-up actions specific to the park's recommended wilderness, there are other implementation plans that would be needed. These plans would include:

- river management: detailed strategies for managing the North Fork of the Virgin River
- water resources: parkwide water issues, including a water supply, treatment, and conservation study
- air tour management: protection of natural quiet and natural sounds
- soundscape management: preservation of the natural soundscapes and mitigation of intrusive noise from sources other than air tours
- commercial services: commercial services necessary and appropriate in the park's frontcountry
- transportation plan: assess the need for expanding the current shuttle system

Congressional authorization would be sought for preparing a related lands study in the next one to three years. The purpose of the study would be to identify key lands that are integral

to maintaining ecological integrity and long-range conservation of critical natural and cultural resources. The study should encompass public lands that might be considered for inclusion in the national park, as well as public and private lands, which might be managed cooperatively with willing parties under easements, agreements or other means. The study should also consider the availability of adjacent lands for accommodating increased recreational use, include an analysis of the local economic impact of alternatives for managing the Zion National Park ecosystem, and determine the ecological boundaries necessary to ensure integrity of park resources and natural processes.

Cost Implications

The planning team prepared general estimates of the costs for the construction of new facilities, the removal of facilities, the rehabilitation/restoration of areas, and other actions. The team also calculated one-time staff costs associated with implementing the alternative (primarily NPS employee costs associated with construction actions and implementation planning) and annual full-time employee costs (primarily associated with operating facilities, and conducting research and monitoring).

Table 2 displays the relative costs of implementing the preferred alternative in 1999 dollars. Administrative costs, such as design and compliance costs, are included in the bottom totals. However, the costs of acquiring easements are not identified. Costs also are not included for expanding shuttle systems outside of the Zion Canyon, such as along the Zion-Mt. Carmel Highway. (Park managers would determine these costs in a future transportation plan.) The actual cost of implementing the preferred alternative would ultimately depend on funding by the National Park Service and Congress over the life of the plan.

The cost figures shown in table 2 (and in the other action alternatives) are only intended to give a very rough idea of the relative costs of the preferred alternative compared to the other alternatives. The estimates are general and should *not* be used for budgeting purposes. Actual costs to the National Park Service will

vary depending on if and when the actions are implemented, the size and location of facilities, and contributions by partners and volunteers. Most of the specifics about the size and location of possible developments will be decided in subsequent, more detailed planning and design.

TABLE 2: RELATIVE COSTS FOR MAJOR CAPITAL CONSTRUCTION AND ANNUAL OPERATIONS FOR THE PREFERRED ALTERNATIVE

Area and Actions	Capital Costs/ Construction/ Restoration	One-Time Staff Costs (# of FTEs / cost) ¹	Annual Staff Costs (# of FTEs / cost)
Kolob Canyons Area			
Modify visitor facilities, and add maintenance and administrative offices	\$515,000	1 FTE / \$51,000	3 FTE / \$135,000
Kolob Terrace Area			
Build and staff a focused visitor facility/ ranger residence/office on BLM land and remove and rehabilitate the Firepit Knoll area	\$515,000	2 FTE / \$87,000	3 FTE / \$127,000
Lava Point Area			
Replace employee residence	\$264,000	1 FTE / \$29,000	0
Main Zion Canyon			
Restore the North Fork Virgin River (low to high ranges)	\$119,000 - \$884,000	2 FTE / \$70,000	0
East Entrance & The Zion-Mt. Carmel Highway			
Build/upgrade visitor facilities	\$85,000	1 FTE / \$29,000	0
Other General Actions			
Manage backcountry areas, deauthorize current research natural areas and authorize new ones	..	2 FTE / \$73,000	3 FTE / \$122,000
Implementation Plans			
Prepare plans and studies (e.g., wilderness, carrying capacity, air tour management, commercial services)	..	15 FTEs / \$650,000	7 FTE / \$266,000
Total Costs²	\$2,022,000 - \$3,055,000	24 FTE / \$1,088,000	16 FTE / \$715,000

Note: This table does not include costs for shuttle systems and easements.

1. FTE = full-time equivalent. One FTE is one person working 40 hours per week.

2. Administrative costs have been added to the total cost and FTE figures.

ALTERNATIVE A: PROVIDE ADDITIONAL OPPORTUNITIES FOR USE AND ACCESS

CONCEPT

The emphasis of alternative A is on providing opportunities for more widespread and increased use of Zion, while still protecting resources and providing opportunities for wilderness experiences. Under this alternative, park managers would improve access inside the park by upgrading or building trails; designating new trail routes; and providing additional visitor facilities, including picnic areas, interpretive facilities, and backcountry campsites. As in the preferred alternative, the management zones would be applied throughout the park, which would limit visitor numbers in certain areas.

GENERAL MANAGEMENT STRATEGIES

In addition to all of the desired conditions and strategies described in the "Park Policies and Practices" chapter, park managers would follow several other management directions and strategies under alternative A. These general management strategies would be the same as those described under the preferred alternative. That is, park managers would implement the same strategies for both alternatives with regard to general natural resource management, air quality, water supply and conservation, visitor use management, and levels and types of park development. They also would implement the same desired conditions and strategies under both alternatives for operating the Zion Canyon Lodge and managing the North Fork of the Virgin River. The same interim use limits for hikers and saddle stock also would be applied under this alternative.

Natural Resource Mitigation Measures

Under Alternative A, park staff would follow all of the natural resource mitigation measures described earlier under "Park Policies and Practices" and under the preferred alternative.

Alternative A differs from the preferred alternative in that alternative A proposes a different zoning scheme, and park managers would follow different zone-specific management strategies.

ZONE ALLOCATION AND RELATED ACTIONS

As in the preferred alternative, under alternative A, the park would be divided into various zones. The same potential management zones would be applied as under the preferred alternative, but they would be applied in different configurations. (See appendix D for additional details on the zones.)

The map for alternative A shows how the park would be zoned. The map shows the zones as both large polygons and as narrow corridors that follow trails, routes, and drainages. It should be noted that this zoning map shows how private inholdings and other lands with private water and mineral rights within Zion National Park would be managed if they were acquired in the future. Until the private rights (as shown on the Wilderness Recommendation and Land Status map) were acquired or relinquished, the National Park Service would recognize that the inholdings were private lands and would respect the valid rights of the landowners and mineral and water right owners.

Under this zoning scheme, the Park Service would include about 61% of the park in the primitive zone. The pristine zone would cover the second largest portion of the park (31%), and would include the East Fork of the Virgin River, the area surrounding and east of the three forks of Timber Creek, upper part of the Narrows, Orderville Canyon, a large area around the Watchman, several of the canyons north of the Zion-Mt. Carmel Highway, and a large block of land west of Zion Canyon. Like the preferred alternative, the Park Service would include most of the park's backcountry in primitive and pristine zones. The vast majority of these areas are not accessible to most visitors, however, due to the park's steep topography (see Access to the Backcountry map in the Affected Environment part). These zones also would be consistent with most of the park being proposed as wilderness.

About 4% of the park would be zoned as research natural areas, including the slopes of Parunuweap Canyon and Shunesburg Mountain, the upper end of Coalpits Wash, upper Shunes Creek, Cane and Current Creeks, and several isolated mesa tops and hanging gardens.

Frontcountry high and low development, transition, and administrative zones would be designated in readily accessible areas. Frontcountry low development zones, accounting for about 2% of the park, would be present at the east entrance along the Zion-Mt. Carmel Highway, a large area along the Kolob-Terrace Road, and the Lava Point area. About 1% of the park would be in transition zones, including much of the floor of Zion Canyon, the Riverside Walk and lower end of the Narrows, Sand Bench, Weeping Rock/Hidden Canyon, Observation Point, and Emerald Pools trails, Middle Fork of Taylor Creek, and the Timber Creek Overlook. Frontcountry high development zones, encompassing about 1% of the park,

would be located at the south park entrance, in Zion Canyon up to the Temple of Sinawava, along the Zion-Mt. Carmel Highway, and along the Kolob Canyons Road. The administrative zone would cover about 0.2% of the park, primarily in Oak Creek, and near the entrances to Kolob Canyons and Lava Point.

The pristine, primitive, and research natural area zones would primarily lie within the recommended wilderness area. However, several of these zones, totaling 6,091 acres (about 4% of the park), would lie outside the recommended and potential wilderness areas. These areas would include the area south of the powerline corridor in the Coalpits area; an area above Lava Point, north of the roads to the MIA camp; and several areas near the Kolob Canyons, Kolob-Terrace, and Zion-Mt. Carmel Roads. These pristine, primitive, and research natural areas would be managed the same way as the zones were managed in the recommended wilderness area.

Frontcountry Areas

Kolob Canyons Road Area. Under alternative A, the Kolob Canyons Road entrance area would be a frontcountry high development zone. The Kolob Canyons visitor center would be expanded and other actions would be taken similar to those of the preferred alternative. These actions include adding a picnic area and a nature trail.

The Park Service also would designate the entire road corridor to its terminus at the Timber Creek Overlook as a frontcountry high development zone. Under this alternative, park staff would allow visitor traffic on the road to substantially increase but would not operate a shuttle system. Managers could improve trailheads/parking areas and add interpretive facilities along the

road. In addition, picnic sites at the Timber Creek Overlook, the Middle Fork of Taylor Creek, and the South Fork of Taylor Creek parking lots would be added. Trailhead parking areas also would be adjusted to meet desired conditions for the trails.

The Timber Creek Overlook trail and the trail along the Middle Fork of Taylor Creek would be managed as special transition zones because they lie within the recommended wilderness area. They would be maintained to meet wilderness requirements, but higher use levels would be allowed than on the majority of the recommended wilderness (see also the section on the recommended wilderness).

The area to the north of the entrance would be an administrative zone. Therefore, actions that could be taken in this zone would be the same as described in the preferred alternative (e.g., add administrative offices and maintenance facilities).

Kolob-Terrace Road Area. All of this area would be a frontcountry low development zone, including the portion of the Kolob-Terrace Road corridor within the park and most of the large nonwilderness area east and west of the road in the vicinity of Grapevine Wash. If visitor numbers in this area increased in the future, park staff would take action to ensure that a rural experience was maintained (e.g., they would offer a shuttle to transport visitors). Other actions that could be taken in this area would be to add picnic sites at the Hop Valley and Wildcat Canyon trailheads and add parking spaces and restrooms at existing trailheads. Because the zone is much larger in alternative A than the other alternatives, an additional possible action would be to build a bicycle trail paralleling the entire road from the proposed facility on BLM lands near North Creek (see below) to the Lava Point area and associated parking at existing or new trailheads within the park. (This

would require cooperation with the county, the state, and possibly some private landowners on road segments that were not within park boundaries.)

As in the preferred alternative, with the agreement of the Bureau of Land Management, the Park Service would build a focused visitor facility/ranger residence/office and restrooms on BLM lands near the park boundary at North Creek. The staff at this facility would provide visitors with park information, issue permits, possibly collect fees, and establish a Park Service presence on this side of the park.

In alternative A the existing Firepit Knoll administrative area and its associated access road would be in a primitive zone. The ranger residence and road would not be consistent with the desired conditions of the primitive zone. Thus, once the new focused visitor facility/ranger residence on the Kolob-Terrace Road was built, the Firepit Knoll ranger residence and its access road would be removed and the area restored to natural conditions.

Lava Point Area. Most of this area, including the Lava Point campground and picnic area, would be a frontcountry low development zone. The following actions would be taken in this area:

- build a new focused visitor facility and adding nature trails
- expand the existing Lava Point campground by up to six sites (doubling the existing capacity) and possibly making water available
- add up to four new picnic sites (for a cumulative total of ten)

Also, if visitor numbers increased in this area, park managers would take action to ensure that the opportunity to experience a rural environment was maintained, such as

limiting the number of private vehicles or offering a shuttle to transport visitors.

Unlike the preferred alternative, in alternative A, the roads leading east of Lava Point onto private land outside the park also would be frontcountry low development zones. To meet the desired zone conditions of allowing public access in a fairly structured rural environment, the roads east of the existing gate (at the West Rim trailhead) would be opened to public motorized use. Like the preferred alternative, the area to the north of the entrance would be an administrative zone, which would support the management of this part of the park. The existing ranger residence at Lava Point would be replaced with a new residence.

South Entrance and the Main Zion Canyon Area. Under alternative A, the Park Service would apply a mix of frontcountry high development, primitive transition, and administrative zones to this part of the park. The location of the zones and the associated necessary or allowable actions generally would be the same as in the preferred alternative. However, in alternative A, all of Hidden Canyon (including the route through the canyon) would be in a transition zone.

The Observation Point trail, the Hidden Canyon trail (including the route through the canyon), and the lower Narrows from Order-ville Canyon south to Mystery Canyon, would be managed as special transition zones because they lie within the recommended wilderness area (see also the section on the recommended wilderness).

East Entrance and the Zion-Mt. Carmel Highway Area. The road corridor and east entrance area would be frontcountry high

development zones. Like the preferred alternative, in alternative A a few picnic sites, restrooms, and associated parking spaces may be added along the road, pulloffs may be removed and rehabilitated, and a voluntary shuttle system may be initiated to better transport visitors to this area and reduce parking congestion. In addition, under alternative A park staff could provide focused visitor facilities and one or two short nature trails. As in the preferred alternative, the short access road to the East Rim trailhead and an area north of the east entrance would be frontcountry low development zones. Actions that could be taken here would be the same described for the preferred alternative (e.g., formalize parking, add picnic sites and a restroom).

The Canyon Overlook trail would be a transition zone. The actions that could be taken would be the same as those described in the preferred alternative (e.g., adding more interpretive signs, improving the parking area).

The existing administrative area at the east entrance would be an administrative zone. In this alternative administrative and/or maintenance facilities would be added to support the increase in visitor services and facilities in this area.

Outside the recommended wilderness, on the park's east boundary, the East Rim trailhead would be a frontcountry low development zone. This trailhead/parking area would be improved to enhance visitor access to this area.

Recommended Wilderness

Under alternative A, the park staff would continue to manage a total of 132,615 acres (about 90% of the park) as wilderness, the same as the no-action alternative (see the Recommended Wilderness and Land Status map). This is consistent with the 1978 wilderness recommendation, with a few changes that reflect the acquisition of inholdings, state surface ownership and mineral rights, grazing rights, and water rights since that time. (The acreage figures also differs from the 1978 figures due to the inclusion of a valid existing water right on Camp Creek that had been overlooked in 1978, and due to the use of more accurate geographic information system maps.) In recognition of valid private rights, an additional 4,175 acres (3% of the park) would continue to be administered as potential wilderness — lands that currently do not qualify for wilderness designation due to nonconforming or incompatible uses (e.g., private inholdings, private water rights). If and when these rights were relinquished or acquired, the potential wilderness would either become part of the wilderness recommendation or be included as designated wilderness.

Like the preferred alternative, in alternative A the recommended wilderness area would be primarily zoned as pristine, primitive, or research natural areas.

Primitive Zones. The primitive zone would be applied to 82,319 acres in the recommended wilderness, which would include several trails and routes. (An additional 3,994 acres of potential wilderness would be included in this zone.) On occasion managers may need to limit or reduce visitor numbers on the Narrows route from the northern park boundary to Orderville Canyon, Orderville Canyon itself, and along the La Verkin Creek trail. The existing use limits for the Left Fork of North Creek and

for camping along the West Rim and La Verkin Creek/Hop Valley trails would continue as interim limits and would be reexamined in the carrying capacity studies and wilderness management plan. Managers may need to place limits on future visitor use elsewhere in the primitive zones, if visitor use levels increased to the point that desired conditions were not being met.

In several areas of the park managers could improve visitor access by adding some trails or clearly delineated routes in areas that were able to withstand increased human use (e.g., in areas where there are no spotted owls or other concerns regarding resources). There would be a greater potential for adding trails or routes in this alternative compared to the preferred alternative because more of the park would be zoned primitive as opposed to pristine. The topography in this area would be most conducive to improving access by:

- upgrading existing trails and routes in the area adjacent to Lava Point, Horse Pasture Plateau, and the three fingers of Timber Creek
- constructing additional narrow, unsurfaced trails or new routes in the above areas and in the Horse Ranch Mountain, Langston Mountain, Pine Spring, Checkerboard Mesa, and Cougar Mountain areas
- adding narrow unsurfaced trails in some of the lower reaches of the side canyons on either side of the Zion-Mt. Carmel Highway.

Designated campsites also could be established in the primitive zone, albeit outside sensitive resource areas. The number of potential new campsites would be greater in this alternative than under the preferred alternative due to the greater portion of the park that would be in primitive zones.

Pristine Zones. The pristine zone would be applied to 44,092 acres in the recommended

wilderness, which would include several known routes. In general, existing conditions meet the undeveloped, low use nature of this zone. However, to ensure that visitors encounter few if any other groups in the Mystery Canyon route, managers may need to limit or reduce visitor numbers (currently the route receives low to moderate use). In the future, managers may need to place limits on visitor use elsewhere in the pristine zones, as well, if visitor use levels increased to the point that desired conditions were not being met. Other actions that could be taken in the pristine zone would be the same as described in the preferred alternative (e.g., remove signs of human evidence and restore natural conditions in areas where necessary, as determined by park managers).

Under alternative A, a corridor along the Parunuweap Canyon following the river floodplain up to Labyrinth Falls would be a pristine zone. This pristine zone would be managed differently from other pristine zones. Park managers would open this corridor to limited numbers of NPS or NPS-sanctioned guided interpretive trips. Public access into the canyon would be permitted only under the following conditions:

- The frequency and type of trips permitted in this area would depend on whether a reliable access route could be established across private land into the lower end of the canyon.
- All trips would be NPS or NPS-sanctioned guided interpretive trips.
- Day trips would be emphasized, and group size would be limited to no more than nine people, including the guide.
- Overnight use may be permitted, but camping would be allowed only in designated areas, and group size would be limited to five individuals, including the guide.

- To ensure that riparian resources are protected, all groups would follow a designated trail, which would have river access points.
- Public access would not be permitted from January 15 through June 15, which would cover the majority of the bighorn sheep lambing, Southwest flycatcher nesting, and Virgin spinedace spawning periods. Park staff may impose other closure periods based on other sensitive resources.

Transition Zones. Ordinarily, transition zones would not be compatible with recommended wilderness. However, five areas within the 1978 recommended wilderness area all receive higher use levels than other trails in the recommended wilderness: the Middle Fork of Taylor Creek, Timber Creek Overlook trail, Observation Point trail, Hidden Canyon trail from the mouth of the slot canyon to the trail terminus, and the Narrows from Orderville Canyon south to Mystery Canyon. In recognition of their higher use levels, these five areas would be designated as special transition zones: the areas would be managed consistently with wilderness, but use levels would be permitted to be higher than in other zones in the recommended wilderness area.

Research Natural Areas

Like the preferred alternative, under alternative A the three existing research natural areas would be deauthorized. In alternative A the number of research natural areas and their acreage would be less than in the preferred alternative due to the emphasis in this alternative on recreational use and access. However, the units and acreage would still provide the basic components needed to form an effective set of research

natural areas and meet the intent for research and long-term monitoring.

The research natural area zone would be applied to 6,145 acres, most of which would lie in the recommended wilderness. These areas are believed to be more suitable and possess a greater variety of ecological communities than those currently designated as research natural areas. They also could be managed more consistently with the intent of the research natural area national network. The research natural areas in alternative A would include a section of the existing Coalpits route (upper Coalpits Wash), most of Parunuweap Canyon (except for the river corridor included as a pristine zone, as noted above), the Shunesburg Mountain area, some isolated mesa tops (e.g., Burnt Mountain, Greatheart Mesa), selected hanging gardens in Zion and Parunuweap canyons (e.g., near Grotto spring, Weeping Rock, and North Menu Falls), and riparian corridors (upper Shunes, Cane and Current Creeks). (See appendix I for a list of all of the research natural areas that would be designated under alternative A, along with their resource attributes.) These areas would be open only to authorized research and NPS-guided educational trips — recreational use would be prohibited. Other actions that park managers could take would be the same as those described for the preferred alternative.

PROPOSED BOUNDARY ADJUSTMENTS

Under alternative A, the Park Service would propose the same boundary adjustments as the preferred alternative. The Park Service would propose a total of five land transfers with the Bureau of Land Management (totaling approximately 950 acres), nine access easements (totaling approximately 15 miles in length), and three conservation easements (totaling approximately 2,220 acres) under alternative A. The Park Service

and Bureau of Land Management would enter into an interim memorandum of understanding for the Park Service to manage the Rockville Bench tract until if and when this proposed boundary adjustment is approved.

It would be the intention of the Park Service to administer and protect the proposed BLM wilderness study area acquisitions in keeping with NPS Management Policies and *Director's Order 41* (Wilderness Preservation and Management). In keeping with established guidelines, the National Park Service would subsequently initiate the administrative process needed to finally recommend to Congress the addition of these units to the national wilderness preservation system as either NPS "designated" or "potential" wilderness.

PROPOSALS FOR WILD, SCENIC, AND RECREATIONAL RIVER DESIGNATION

Alternative A would propose the same drainages for inclusion in the national wild and scenic rivers system as the preferred alternative: the North Fork of the Virgin River above and below the Temple of Sinawava, the East Fork of the Virgin River, North Creek, La Verkin Creek, and Taylor Creek, and their tributaries. In addition, all six BLM segments evaluated were found to be eligible and suitable, with the exception of the upstream 1.7 mile segment of Shunes Creek, from Kane County line to the dry fall. (See table 1 for the proposed classifications of the drainages.)

IMPLEMENTATION

Priorities and Funding

Like the preferred alternative, the Park Service would implement actions under alternative A over the next 20 years as

funding became available. Park managers could establish partnerships with other agencies or groups to implement several of these actions, and would need to increase and reallocate staff within park programs to support the implementation of this alternative. Project priority would be based on the criteria listed under the preferred alternative.

Under alternative A, the Park Service also would prepare all of the "step-down" implementation plans and studies described under the preferred alternative (e.g., a wilderness management plan, carrying capacity studies, river management plan, and commercial services plan). The Park Service would seek public input in the preparation of all of these plans and prepare additional environmental documentation as needed to comply with the National Environmental Policy Act.

Cost Implications

Table 3 displays the relative costs of implementing alternative A in 1999 dollars.

The table shows general estimates of the costs for constructing new facilities, removing facilities, rehabilitating/restoring areas, and conducting other actions under alternative A. The table also displays one-time costs associated with implementing the alternative (primarily NPS employee costs associated with construction actions and implementation planning) and annual full-time employee costs (primarily associated with operating facilities and conducting research and monitoring). However, the table does not identify the costs of acquiring easements or include costs for expanding shuttle systems outside of the Zion Canyon, such as along the Zion-Mt. Carmel Highway. (The Park Service would determine these costs in a future transportation plan.)

The cost figures are only intended to give a very rough idea of the relative costs of alternative A compared to the other alternatives. All of the caveats regarding the cost figures described under the preferred alternative also apply to alternative A.

TABLE 3: RELATIVE COSTS FOR MAJOR CAPITAL CONSTRUCTION AND ANNUAL OPERATIONS FOR ALTERNATIVE A

Area and Actions	Capital Costs/ Construction	One-Time Staff Costs (# of FTEs / cost)	Annual Staff Costs (# of FTEs / cost)
Kolob Canyons Area			
Modify visitor facilities, and add maintenance and administrative offices	\$763,000	2 FTE / \$80,000	4 FTE / \$182,000
Kolob Terrace Area			
Build a focused visitor facility/ ranger residence/office on BLM land, visitor facilities (e.g., bicycle trail), and remove and rehabilitate the Firepit Knoll area	\$2,926,000	6 FTE / \$229,000	4 FTE / \$155,000
Lava Point Area			
Add visitor facilities and replace employee residence	\$368,000	4 FTE / \$131,000	2 FTE / \$75,000
Main Zion Canyon			
Restore the North Fork Virgin River (low to high ranges)	\$119,000 - \$884,000	2 FTE / \$73,000	0
East Entrance & The Zion-Mt. Carmel Highway			
Build visitor, administrative, and maintenance facilities	\$840,000	7 FTE / \$251,000	6 FTE / \$238,000
Other General Actions			
Manage backcountry areas, conduct NPS-guided interpretive trips through Parunuweap, deauthorize current research natural areas and authorize new ones	--	2 FTE / \$73,000	8 FTE / \$335,000
Implementation Plans			
Prepare plans and studies (e.g., wilderness, carrying capacity, air tour management, commercial services)	--	15 FTE / \$650,000	7 FTE / \$266,000
Total Costs²	\$6,772,000 - 7,804,000	38 FTE / \$1,636,000	31 FTE / \$1,376,000

Note: The table does not include costs for shuttle systems and easements.

1. FTE = full-time equivalent. One FTE is one person working 40 hours per week.

2. Administrative costs have been added to the total cost figures.

ALTERNATIVE B: RESOURCE PROTECTION EMPHASIS

CONCEPT

The emphasis of alternative B is on providing increased protection for park resources while still providing a range of visitor experiences. To protect park resources, strict limits would be imposed on the use of several trails and routes, and recreational use would be prohibited in several areas. There would be minimal new development in the park. As in the preferred alternative, management zones would be applied throughout the park, which would limit visitor numbers in more areas. (This alternative incorporates concepts from alternative C and D in the October 1997 "Alternatives Workbook.")

Alternative B and the preferred alternative differ primarily in the zoning scheme and zone-specific actions that would be taken. The two alternatives also differ with regard to the strategy for operating the shuttle system, the desired conditions and strategies for the Zion Canyon Lodge, and the adjustments to the wilderness proposal.

GENERAL MANAGEMENT STRATEGIES

Natural Resource Mitigation Measures

Under alternative B, the Park Service would follow all of the natural resource mitigation measures described earlier under "Park Policies and Practices" and under the preferred alternative.

In addition to the desired conditions and strategies described in the "Park Policies and Practices" chapter, the Park Service would follow several other management directions and strategies under alternative B. Most of these general management strategies are the same as those described under the preferred alternative. These strategies include the

general management and natural resource management strategies, as well as the strategies for managing water quantity and quality, visitor use, and levels and types of park development. The same interim use limits for hikers and saddle stock also would be applied here.

Management of the North Fork of the Virgin River

In general, under alternative B, park managers would implement the same desired conditions and strategies described in the preferred alternative for managing the North Fork of the Virgin River. Although most of the river would be a primitive zone in the main Zion Canyon, this zoning would not affect the river restoration effort. (The gabions and riprap along the river are inconsistent with the primitive zone conditions, but in this case, some artificial structures may be retained to protect the road and other facilities in the canyon.) Also under alternative B, all water collection structures at the springs would be removed.

Zion Canyon Lodge

Zion Canyon Lodge, currently owned by the National Park Service, has historically provided food and lodging to park visitors in a spectacular setting. Some believe it is not an appropriate facility in the park and that its services are duplicated outside of the park. Under alternative B, the Park Service would change the lodge facilities to meet specific visitor education and park research needs, rather than provide food service and lodging to the general visiting public. The lodge facilities would be an environmental education center offering for a variety of programs, much like the Grand Canyon Institute or the

Yosemite Institute. It would provide opportunities to enhance science-based education for the visiting public through seminars, workshops, residential camps and similar programs. An essential element of this facility would be a center to support NPS, academic, and professional research in the cultural, natural, and social sciences. The planning team anticipates that under this alternative, private enterprises outside the park in nearby communities would meet visitor lodging and food service needs.

- *Desired Condition:* An internationally renowned, state-of-the-art facility supports research and science-based education through elementary, secondary and adult programs. With this facility, the public is actively engaged in the study of park natural, cultural, and recreational resources and park management.
- *Strategies:* The Park Service would convert Zion Lodge facilities to a science education center with an associated research station. The lodge would retain kitchen, dining, and lodging facilities to the extent necessary to support seminars, workshops, residential camps, and domiciled scientists. Existing structures would also house classrooms, conference meeting rooms, and research and teaching laboratories, as well as storage and maintenance space. The Park Service would develop agreements to locate park-based, university research field stations at the lodge facilities. Support for the facility would be developed through a combination of private donations, donations to a newly established Zion-based nonprofit organization, fees associated with locating university field stations at Zion, and federal funds, as necessary. A nonprofit organization would be established to operate and maintain the facility under

agreement with the National Park Service.

ZONE ALLOCATION AND RELATED ACTIONS

Like the preferred alternative, the Park Service would divide the park into various zones that identify how to manage different areas of the park to achieve desired resource and social conditions and to serve recreational needs. The same potential management zones described under the preferred alternative would be applied in alternative B. (See appendix D for additional details on the zones.)

The map for alternative B shows the park zones, both as large polygons and as narrow corridors that follow trails, routes, and drainages. It should be noted that this zoning map shows how private inholdings and other lands with private water and mineral rights within Zion National Park would be managed if they were acquired in the future. Until the private rights (as shown on the Wilderness Recommendation and Land Status map) were acquired or relinquished, the National Park Service would recognize that the inholdings were private lands and would respect the valid rights of the landowners and mineral and water right owners.

In alternative B, the Park Service would include most of Zion in pristine and research natural area zones. The pristine zone would be the largest zone, covering about 80% of the park. About 14% of the park would be research natural areas, including the southeast corner of the park, all of Parunuweap Canyon, most of Shutes Creek, Gifford Canyon, the Right Fork and most of the Left Fork of North Creek, Beartrap Canyon, Willis Creek, lower La Verkin Creek south of the La Verkin Creek trail, Dalton Wash, and several hanging gardens and isolated mesa tops. Although little use would occur in these zones, the majority of these areas are not accessible to most

visitors due to the park's steep topography (see "Access to the Backcountry" in the Affected Environment part). These zones also would be consistent with most of the park being proposed as wilderness.

Primitive areas would cover approximately 5% of the park, including much of the floor of Zion Canyon, a large area around Lava Point, the Narrows from the north park boundary down to Mystery Canyon, a travel corridor along the Left Fork of North Creek, much of the West Rim trail, the upper ends of the East Mesa and East Rim trails, Hidden Canyon, and Cable Mountain and Deertrap Mountain trails.

Like the previous two alternatives, front-country high and low development zones, as well as transition, and administrative zones, would be in areas that the public can readily access and outside the recommended wilderness area. About 0.6% of the park would be included in frontcountry low development zones, including the area along the Zion-Mt. Carmel Highway, the Zion Canyon Scenic Drive, the Kolob-Terrace Road, Lava Point, and the Kolob Canyons Road. Frontcountry high development zones would cover about 0.2% of the park and would include the south park entrance, the Zion Lodge area, the east park entrance, and the Kolob Canyons entrance. Less than 0.1% of the park would be transitional zones, including the Canyon Overlook trail, the Hidden Canyon trail up to the mouth of the canyon, the Riverside Walk trail up to Mystery Canyon, and the road from Lava Point ranger residence to the West Rim trailhead. The administrative zone would also comprise about 0.1% of the park.

The pristine, primitive, and research natural area zones would primarily lie within the recommended wilderness area. However, several of these zones, totaling 9,884 acres (about 7% of the park) would lie outside the recommended wilderness and potential areas. These areas include the land south of the

powerline corridor in the Coalpits area; an area above Lava Point, north of the roads to the MIA camp; an area west of the Kolob-Terrace Road by the Smith Mesa Road; and several areas near the Kolob Canyons, Kolob-Terrace, and Zion-Mt. Carmel Roads. These pristine, primitive, and research natural areas would be managed the same way as the zones are managed in the recommended wilderness area.

The remainder of this part describes how the Park Service would zone different areas of the park and the actions that could occur under alternative B. The actions are those the planning team believes would most likely occur over the next 20 years in the park, given the management alternative concept, zone definitions, and the park's existing conditions and environmental constraints. All of the proposed new facilities would be built in already disturbed areas where possible. Mitigation measures would also be taken to avoid sensitive areas, such as threatened and endangered species habitat and archeological sites.

Frontcountry Areas

Kolob Canyons Road Area. Under alternative B, the entrance area would be a frontcountry high development zone.

However, in keeping with the philosophy of this alternative, the Park Service would only provide a few new developments (e.g., adding a picnic area and/or a nature trail).

The Kolob Canyons Road itself (the road corridor from the entrance gate to the Timber Creek Overlook trailhead) would be a frontcountry low development zone. The actions that could be taken to better meet zone conditions would be the same as in the preferred alternative (e.g., limit traffic, run shuttles, improve trailheads and interpretive facilities along the road), with one exception — the existing parking lot for the South Fork of Taylor Creek would be removed in alternative

B. (This action would be taken because the area would be a pristine zone, which would limit use.)

Like the preferred alternative, the Timber Creek Overlook trail would be managed as a special transition zone because it lies within the recommended wilderness area. The trail would be maintained to meet wilderness requirements, but higher use levels would be allowed than on the majority of the recommended wilderness (see also the section on the recommended wilderness).

The area to the north of the entrance would be an administrative zone. The actions taken in this zone would be the same as described in the preferred alternative (e.g., add administrative offices and maintenance facilities).

Kolob-Terrace Road Area. Under alternative B, the portion of the Kolob-Terrace Road corridor within the park would be a frontcountry low development zone. Thus, actions that could be taken to better meet zone conditions would be the same as in the preferred alternative, except that parking at the former Right Fork would be removed. (Both the Right Fork route and the Wildcat Canyon trail would be removed due to zoning the areas as pristine areas.) Trailheads for the Grapevine and Hop Valley trails also would be removed because these trails would be pristine zones.

As in the preferred alternative, with the agreement of the Bureau of Land Management, the Park Service would build a focused visitor facility/ranger residence/ office and restrooms on BLM lands near the park boundary at North Creek.

Like the preferred alternative, the Firepit Knoll ranger residence and its access road would be removed and the area would be restored when the new focused visitor facility/ranger residence was built on the Kolob-Terrace Road.

Lava Point Area. The Park Service would apply the frontcountry low development zone to the entrance area, the road accessing the campground and picnic area, and the campground and picnic areas. New picnic sites could be added here. However, in keeping with the philosophy of alternative B, little or no other new development would occur.

The road from the ranger residence to the West Rim trailhead would be a transition zone. To meet desired conditions, the road by the ranger residence would be gated and closed to access by the motorized public beyond that point. (Park staff and owners and guests of the private property to which the roads lead would be allowed to use motor vehicles, as per the special exemptions described for the normally nonmotorized transition zone.) In addition, the West Rim trailhead would need to be relocated by the Lava Point ranger residence.

As in the preferred alternative, the road east of the gate at the West Rim trailhead, including all three forks leading onto private land outside of the park, would be an administrative zone. This would allow continued motorized access by administrative vehicles and the private landowners and their guests. An area north of the entrance also would be an administrative zone to support management of this part of the park. The existing ranger residence here would be replaced with a new residence.

South Entrance and the Main Zion Canyon Area. A mix of frontcountry high development, frontcountry low development, transition, primitive, pristine, and administrative zones would be applied to this part of the park.

The areas zoned frontcountry high development would include the following areas:

- the road corridor from the south entrance to junction with the main

Zion Canyon Road, including the Zion Museum

- most of the south entrance area itself, including the campgrounds, the new visitor center/shuttle staging site, and the segments of the Pa'rus trail and the North Fork of the Virgin River running through the campgrounds
- most of the Zion Canyon Lodge area, including the parking areas, lodging facilities, and restrooms

In these areas a few picnic sites could be added in disturbed areas.

The frontcountry low development zone would be applied to the main Zion Canyon road corridor from its junction with the Zion-Mt. Carmel Highway to its terminus at the Temple of Sinawava. To reduce resource impacts and improve the quality of the visitor experience along this segment of the road as well as in the Narrows, the number and frequency of shuttles going to the Narrows would be lowered in this alternative compared to the other alternatives.

The Park Service would apply the transition zone to the Grotto and the canyon bottom east of the road corridor, and to a small area across from the Zion Canyon Lodge that includes the North Fork of the Virgin River. Several trails also would be transition zones, including: the segment of the Pa'rus trail extending north of the campgrounds; the lower, middle, and upper Emerald Pools trails; a segment of the West Rim trail; the trail to Angel's Landing; the Hidden Canyon trail to the mouth of the canyon; and the Riverside Walk trail up to the junction with Mystery Canyon. No actions would be necessary to meet zone conditions in these areas.

The lower Narrows north of Mystery Canyon as far as Orderville Canyon would be managed as a special transition zone because it lies within the recommended wilderness

area. It would be maintained to meet wilderness requirements, but higher use levels would be allowed than on the majority of the recommended wilderness (see also the section on the recommended wilderness).

Under this alternative, the road above the maintenance yard in Oak Creek would be zoned pristine. As a result, park managers would need to restore the area to natural conditions. This would include removing the road, the research camp (four tent pads), water storage and pipeline, boneyard items, maintenance equipment, and a nursery shed.

Also under alternative B, actions would need to be taken in primitive zones in the main Zion Canyon. Specifically, all of the water collection structures at the springs in the main Zion Canyon would need to be removed to meet the intent of the alternative. (A new water collection and treatment facility would be built near the south entrance of the park to continue supplying water to the park.)

Several areas would be administrative zones, including Sammy's Canyon (site of the shuttle maintenance facilities), the Watchman employee housing area, the old waste treatment plant, a portion of the existing Oak Creek employee housing and maintenance area, the Pine Creek housing area, the Birch Creek employee housing area, and concessions' support facilities around the Zion Canyon Lodge. No additional developments would be built under alternative B in these areas.

East Entrance and the Zion-Mt. Carmel Highway Area. An area north of the east entrance would be a frontcountry high development zone. If the Park Service could not locate a site outside the park boundary, this area would be used for a new full-service visitor center with shuttle staging, parking, and restrooms. The facility would be necessary to support a mandatory shuttle system along the Zion-Carmel Highway.

The road corridor (100 feet either side of the centerline) and the short access road to the East Rim trailhead would be frontcountry low development zones. To meet the conditions of this zone, managers would need to significantly reduce vehicle traffic to levels resembling a more rural experience. The most reasonable way this could be achieved would be to implement a mandatory visitor shuttle system between the south and east entrances. (Nonrecreational commuter traffic — those who live on one side of the park and are merely passing through — would still be allowed to use the highway.) The Park Service would need to purchase new shuttle vehicles since the ones to be used in the main Zion Canyon cannot drive up the grades on the Zion-Mt. Carmel Highway.

With the mandatory shuttle, several other actions would be necessary. Since all of the pullouts along the road would no longer be needed, they would be removed and the areas rehabilitated. The parking areas along the road also would be redesigned as shuttle stops and several social trails would be rehabilitated. In addition, the new visitor center and staging area at the south entrance may need to be expanded to provide for shuttles going both to the main Zion Canyon and the east entrance.

Park managers could take other actions to better meet the conditions of the frontcountry low development zone, such as to provide short nature trails at the east entrance and picnic sites along the road. However, the number of possible picnic sites would be limited to a total of ten along the whole road, as per the definition of a frontcountry low development zone.

The Canyon Overlook trail would be a transition zone. Actions that could be taken would be the same as described in the preferred alternative (e.g., adding more interpretive signs, improving the parking area).

Outside the recommended wilderness, on the park's east boundary, the East Rim trailhead would be a frontcountry low development zone. This trailhead/parking area may be improved to enhance visitor access to this area.

Recommended Wilderness

Under alternative B, the park staff would continue to manage a total of 132,615 acres (about 90% of the park) as wilderness, the same as the no-action alternative (see the Recommended Wilderness and Land Status map). This is consistent with the 1978 wilderness recommendation, with a few changes that reflect the acquisition of inholdings, state surface ownership and mineral rights, grazing rights, and water rights since that time. (The acreage figures also differs from the 1978 figures due to the inclusion of a valid existing water right on Camp Creek that had been overlooked in 1978, and due to the use of more accurate geographic information system maps.) In recognition of valid private right, an additional 4,175 acres (3% of the park) would continue to be administered as potential wilderness — lands that currently do not qualify for wilderness designation due to nonconforming or incompatible uses (e.g., private inholdings, private water rights). If and when these rights were relinquished or acquired, the potential wilderness would either become part of the wilderness recommendation or be included as designated wilderness.

Like the preferred alternative, in alternative B the recommended wilderness area would be primarily zoned as pristine, primitive, or research natural areas.

Primitive Zones. The Park Service would apply the primitive zone to 4,455 acres in the recommended wilderness, primarily just along existing trails and routes. To meet desired zone conditions, park managers may need to limit or reduce visitor numbers on the follow-

ing trails and routes: the Narrows from the northern park boundary to the junction with Mystery Canyon, the route up through Hidden Canyon, the Middle Fork of Taylor Creek, La Verkin Creek trail, Upper Emerald Pool, Watchman trail, and Sand Bench trail. In addition, visitor numbers would need to be limited in the Lava Point area, and the existing concession horse operation on the Sand Bench trail would need to be eliminated, because this type of use would not be consistent with the primitive zone conditions. The existing use limits for the Left Fork of North Creek and for camping along the West Rim trail would continue as interim limits and be reexamined in the carrying capacity studies and wilderness management plan. In the future, managers may need to place limits on visitor use elsewhere in the primitive zones, if visitor use levels increased to the point that desired conditions are not being met.

Under alternative B visitor access could be improved in the primitive zones by adding some trails or clearly delineated routes in areas that were able to withstand increased human use (e.g., in areas where there are no spotted owls or other sensitive species habitat). Zion National Park would likely offer fewer trails and designated campsites in alternative B than in the preferred alternative because much less of the park would be zoned primitive in alternative B. The topography in the primitive area adjacent to Lava Point and in the main Zion canyon, primarily near the river would be most conducive to improved access. In these areas, managers could upgrade existing trails and routes or provide additional narrow, unsurfaced trails or new routes.

Designated campsites also could be established in the primitive zones, albeit outside of sensitive resource areas. There would be fewer potential new campsites in this alternative than under the preferred alternative and alternative A because more of the park would be in pristine zones and less would be in primitive zones.

The primitive section of the North Fork of the Virgin River within the main canyon also would be restored. At a minimum, park staff would have to remove or modify all gabions, riprap, and other river structures inconsistent with the primitive zone structures (e.g., rebuild them in a manner that had less impact on natural river processes). The Park Service may make several exceptions to this requirement, however, to retain some structures that protect the main canyon road and retain the Springdale water diversion.

Pristine Zones. In this alternative 107,802 acres would be designated as pristine zones in the recommended wilderness, which would include a number of trails and routes. (An additional 3,985 acres of potential wilderness would be included in this zone.) To ensure the probability of encountering no other people, managers may need to limit or reduce visitor numbers on the following trails and routes: Camp Creek, North and South Forks of Taylor Creek, Hop Valley, the Connector trail, Northgate Peaks, part of Wildcat Canyon, Orderville Canyon, Mystery Canyon, and upper Coalpits Wash. If visitor use levels in other pristine areas caused desired conditions to be exceeded, managers may need to place limits on visitor use levels in these areas as well.

Because trails, clearly delineated routes (as opposed to faint routes or climbing bolts), and designated campsites are inconsistent with the desired conditions of the pristine zone, the above trails and routes, plus any designated campsites along them would be removed and the areas restored to natural conditions.

Some places under this alternative may be in pristine zones but have evidence of human use. For example, on either side of the Zion-Mt. Carmel Highway there are well-used routes, signs, obvious natural and cultural resource damage (e.g., trampled vegetation, eroded soils, vandalized cultural sites), and other evidence of people. In these areas park staff would remove the evidence of human use

and restore these areas to natural conditions when feasible. Bolts on climbing routes and either national register-eligible or listed resources, including historic structures, would remain.

Transition Zones. Ordinarily, transition zones would not be compatible with recommended wilderness. However, two areas within the 1978 recommended wilderness area receive higher use levels than other trails in the recommended wilderness: the Timber Creek Overlook trail and the Narrows from the northern terminus of Riverside Walk to Mystery Canyon. In recognition of their higher use levels, these areas would be designated as special transition zones: the areas would be managed consistently with wilderness, but use levels would be permitted to be higher than in other zones in the recommended wilderness area.

Research Natural Areas

Like the preferred alternative, under alternative B the three existing research natural areas would be deauthorized. In alternative B the number of research natural areas and their acreage would be more than in the preferred alternative due to the emphasis in this alternative on resource protection.

The research natural area zone would be applied to 20,348 acres, most of which would lie in the recommended wilderness. This zone would apply to areas believed to be more suitable than those currently designated as research natural areas and that could be managed more consistently with the intent of the research natural area national network (see the no-action alternative). Research natural areas in alternative B would include several riparian corridors: Beartrap Canyon, Willis Creek, Goose Creek, upper La Verkin Creek, lower La Verkin Creek south of the La Verkin Creek trail (including Timber Creek south of the trail, and Cane and Currant Creeks), Crater

Hill/Dalton Wash area, the Right Fork of North Creek, the tributaries of the Left Fork of North Creek (including Wolf Springs Wash, Pine Spring Wash, and Little Creek), Gifford Canyon, Parunuweap, and most of Shunes Creek. Other research natural areas would cover all isolated mesa tops (including Timber Top, Burnt Mountain, and Crazy Quilt); a relict piñon-juniper forest; and hanging gardens in Zion and Parunuweap canyons (e.g., near Grotto Spring, Weeping Rock, and North Menu Falls). (See appendix I for a list of all of the research natural areas that would be designated under alternative B, along with their resource attributes.) Research natural areas would be open to authorized research and NPS-guided educational trips — recreational use would be prohibited. Other actions that park managers could take would be the same as those described for the preferred alternative.

PROPOSED BOUNDARY ADJUSTMENTS

In alternative B, the Park Service would propose the same boundary adjustments as those described in the preferred alternative. A total of five land transfers with the Bureau of Land Management (totaling approximately 950 acres), nine access easements (totaling approximately 15.5 miles in length), and three conservation easements (totaling approximately 2,220 acres) would be proposed. The Park Service and Bureau of Land Management would enter into an interim memorandum of understanding for the Park Service to manage the Rockville Bench tract until if and when this proposed boundary adjustment is approved.

It would be the intention of the Park Service to administer and protect the proposed BLM wilderness study area acquisitions in keeping with NPS Management Policies and *Director's Order 41* (Wilderness Preservation and Management). In keeping with established

guidelines, the National Park Service would subsequently initiate the administrative process needed to finally recommend to Congress the addition of these units to the national wilderness preservation system as either NPS "designated" or "potential" wilderness.

PROPOSALS FOR WILD, SCENIC, AND RECREATIONAL RIVER DESIGNATION

Alternative B would propose the same drainages for inclusion in the national wild and scenic river system as the preferred alternative. The Park Service would propose the North Fork of the Virgin River above and below the Temple of Sinawava, the East Fork of the Virgin River, North Creek, La Verkin Creek, and Taylor Creek, and their tributaries for wild, scenic, and recreational river designation. In addition, all six BLM segments evaluated were found to be eligible and suitable, with the exception of the 1.7-mile segment of Shunes Creek, from Kane County line to the dry fall. (See table 1 for the proposed classifications.)

IMPLEMENTATION

Priorities and Funding

Like the preferred alternative and alternative A, the Park Service would implement the actions under alternative B over the next 20 years as funding becomes available. Partnerships with other agencies or groups would be established to implement several of these actions. Staff increases and reallocations within park programs also would be necessary to support the implementation of this alternative. Project priorities would be based on the criteria listed under the preferred alternative.

Under alternative B, park managers also would prepare all of the "step-down" implementation plans and studies described under the preferred alternative (e.g., carrying capacity studies, wilderness management plan, river management plan, and commercial services plan). The Park Service would seek public input for preparing all of these plans and would prepare additional environmental documentation as needed to comply with the National Environmental Policy Act.

Cost Implications

Table 4 provides general cost estimates for alternative B in 1999 dollars. The table shows costs of constructing new facilities, removing facilities, rehabilitating/restoring areas, and conducting other actions. The table also shows one-time costs associated with implementing the alternative (primarily NPS employee costs associated with construction actions and implementation planning) and annual full-time employee costs (primarily associated with operating facilities and conducting research and monitoring). However, the table does not show estimates for the costs of acquiring easements or costs for expanding shuttle systems outside of the Zion Canyon, such as along the Zion-Mt. Carmel Highway. These costs would be determined in a future transportation plan.)

The estimates are only intended to give an idea of the relative costs of alternative B compared to the other alternatives. All of the caveats regarding the cost estimates described under the preferred alternative also apply to these cost estimates.

TABLE 4: RELATIVE COSTS FOR MAJOR CAPITAL CONSTRUCTION AND ANNUAL OPERATIONS FOR ALTERNATIVE B

Area and Actions	Capital Costs/ Construction	One-Time Staff Costs (# of FTEs / cost) ¹	Annual Staff Costs (# of FTEs / cost)
Kolob Canyons Area			
Modify visitor facilities, and add maintenance and administrative offices	\$315,000	2 FTE / \$73,000	0.5 FTE / \$18,000
Kolob Terrace Area			
Build a focused visitor facility/ranger residence/office on BLM land, remove visitor facilities, and remove facilities and rehabilitate the Firepit Knoll area	\$556,000	3 FTE / \$124,000	4 FTE / \$142,000
Lava Point Area			
Replace/add employee residences, relocate the West Rim trailhead	\$224,000	1 FTE / \$36,000	--
Main Zion Canyon			
Restore the North Fork Virgin River (low to high ranges), convert the lodge to a research/education facility ² , remove water collection structures, and build a new treatment facility.	\$4,799,000 - 5,564,000	3 FTE / \$127,000	7 FTE / \$273,000
East Entrance & The Zion-Mt. Carmel Highway			
Build visitor, administrative, and maintenance facilities	\$2,660,000	10 FTE / \$348,000	8 FTE / \$295,000
Other General Actions			
Manage backcountry areas, deauthorize current research natural areas, and authorize new ones	--	2 FTE / \$73,000	4 FTE / \$166,000
Implementation Plans			
Prepare plans and studies (e.g., wilderness, carrying capacity, air tour management, commercial services)	--	15 FTE / \$650,000	7 FTE / \$266,000
Total Costs³	\$11,548,000 - 12,581,000	40 FTE / \$1,574,000	33.5 FTE / \$1,276,000

Note: The table does not include costs for shuttle systems and easements.

1. FTE = full-time equivalent. One FTE is one person working 40 hours per week.

2. Administrative costs have been added to the total cost figures.

3. An additional payment would need to be made for possessory interests to the lodge concessioner.

AFFECTED
ENVIRONMENT

INTRODUCTION

The "Affected Environment" describes the existing environment of Zion and the surrounding region. The focus of this part is on key park resources, uses, facilities, and socioeconomic characteristics that have the potential to be affected by the alternatives should they be implemented. Some additional features are discussed because they provide context, and/or must be considered in

environmental impact statements (e.g., floodplains, certain threatened and endangered species). For additional information on Zion's natural and human environment, see Connor and Vetter (1986), Crawford (1986, 1988), Euler (1966), Hamilton (1992), NPS (1994a), Schroeder (1955), Stoffle et al. (1995), Wauer (1965), Wauer and Carter (1965), and Welsh (1990).

NATURAL RESOURCES

AIR QUALITY

Zion National Park is designated a class I area under the Clean Air Act. This designation means that air quality characteristics, including visibility, can be degraded the least compared to other Clean Air Act designations. Current local sources of pollution include particulate matter from campfires and wood stoves and vehicle emissions. Long-distance transport of emissions to the park occurs from regional pollution sources, such as coal-fired generating plants and large urban areas. Wind and dust also create degraded visibility and air quality in and around the park. These sources of pollution affect visibility by introducing haze into the sky. There are no point source pollution sources currently visible from the park.

WATER QUALITY

Water quality conditions in Zion National Park do not vary dramatically from source to source, though individual streams may vary considerably over time particularly in turbidity and suspended sediment. Springs from the base of the Navajo sandstone are moderately low in dissolved solids (specific conductance near 300 $\mu\text{mhos/cm}$), while streams draining from higher or lower strata have higher concentrations. Of the major rivers in the park, La Verkin Creek and North Creek have the highest levels of mineralization (specific conductance near 1000 $\mu\text{mhos/cm}$), while the North and East Forks of the Virgin River show somewhat lower levels (specific conductance of 600-800 $\mu\text{mhos/cm}$). The presence of dissolved metals in drinking water in excess of drinking water standards has rarely occurred. Thus, these events appear to be anomalies rather than identifiable problems.

Sediment and turbidity are the most significant water quality characteristics of the rivers and streams in the park. While most streams are relatively clear during periods of low flow, high flows are accompanied by large increases in sediment transport and turbidity. Most of the sediment movement occurs during spring runoff, which may last several weeks, and during very brief runoff events following summer thunderstorms. The total sediment transport of the North Fork of the Virgin River is estimated to be 200,000 tons/year. Most of this appears to be natural, although it may be enhanced by roads and grazing on the watershed.

The greatest water quality concern for most visitors is contamination from fecal bacteria. Though analyses have been limited, bacterial levels have exceeded the standard for full-body contact recreation 20% to 30% of the time. No closures or advisories have been issued regarding bacterial contamination of waters in the park, however. Probable sources of fecal bacteria include residences, livestock and wildlife upstream of the park, recreational activity, and wastewater treatment systems. Visitors engaged in water play are at risk of ingesting contaminated water and becoming infected by enteric diseases. Natural turbidity as well as sediment stirred up by water play probably increase bacteria levels.

NORTH FORK OF THE VIRGIN RIVER FLOODPLAIN

The North Fork of the Virgin River is the main drainage through Zion Canyon. The river experiences wide fluctuations in flow with a seasonal snowmelt peak in the spring followed by generally low summer and fall flows. Occasional heavy storms, which can occur at any time of the year but are more

common in summer and early fall, produce the largest flows in the Virgin River system. These runoff events are usually of short duration and can occur suddenly. Floods in desert regions like Zion are often accompanied by large quantities of debris and sediment, increasing the impact of floods.

The morphology of Zion Canyon has been shaped by landslide activity. About 6,000 years ago, a very large landslide dammed the river, forming a lake that extended 4 to 5 miles upstream to the mouth of the Narrows. The sediments deposited in this lake form the relatively flat canyon floor. Prior to channelization, the Virgin River meandered across the canyon floodplain, spilling over its banks in roughly two out of three years. The geologic record, as interpreted by Hereford et al. (1995), shows that the river underwent cycles of down cutting and deposition, which were influenced by climate trends.

Through much of the lower Zion Canyon (i.e., from the park's south boundary to the Canyon Junction bridge), the 100- and 500-year floodplains closely follow the banks of the Virgin River. An earthen levee system present along the riverbanks through the Watchman campground has altered the historic floodplains in this area. The probable maximum flood area flows out into open areas of the park, portions of the housing areas, campgrounds, and much of the valley floor. All of the existing park facilities near Oak Creek are within the probable maximum floodplain of that creek. The current visitor center parking area, resource management offices, and one historic residence are within the 100-year floodplain of Oak Creek; the visitor center, most other housing, and the maintenance area are within the 500-year floodplain; and two houses are outside of the 500-year floodplain. The water tank and corrals at Birch Creek are within

Floodplain Definitions

100-year floodplain: the average maximum flood that can be expected to occur every 100 years or that has a 1% chance of occurring in any given year. Floods of this magnitude occur frequently enough to pose a serious threat to facilities and people.

500-year floodplain: the average maximum flood that can be expected to occur every 500 years

Probable maximum flood: the largest flood that can reasonably be expected to occur in a drainage. However, these floods are rare, and their statistical probability of occurring is uncertain. The floodplain that is subject to regulation by Executive Order 11988 (Floodplain Management) and the NPS guidelines for floodplain compliance is the probable maximum floodplain in a flash flood area.

the probable maximum floodplain of the river.

The channel of the North Fork above Birch Creek was channelized in the 1920s and 1930s to protect the newly constructed Zion Lodge. The stream was confined to the westernmost portion of the 1,000-foot-wide floodplain by excavating the channel deeper and by building levees along the eastern side of the channel for about 4.5 miles. Some levees are armored with gabions (heavy wire baskets filled with rock). Although the wires along the bottom of many of the gabions have rusted away, the levees have been periodically repaired. They have remained effective in isolating the river from the floodplain for approximately 2 miles, even when large floods have occurred (up to 10,000 cubic feet per second).

RIPARIAN/WETLANDS COMMUNITIES/HANGING GARDENS

Riparian communities comprise an important segment of the park's vegetation. These riparian areas are directly influenced by permanent water and include land and vegetation adjacent to rivers, streams, springs,

and seeps. The riparian communities in Zion include nearly 25 miles of perennial streams. These communities tend to be rare, small, or linear locales, separated by vast expanses of more arid lands. The riparian areas support the richest flora and avian fauna in the park and are important wildlife habitat for many species. Due to their linear nature, the riparian areas serve as connectors between habitat types and provide travel routes for wildlife.

In many areas within Zion, riparian communities are relatively intact. As shady, cool, wet areas, they are disproportionately preferred by users over the surrounding arid lands. The North Fork of the Virgin River is one of the most popular destinations in the park during the warm summer months.

Some reaches of the North Fork have been channelized. Levees and constricted bridge crossings, among other factors, have caused downcutting of the channel, reducing the frequency of flooding and lowering alluvial ground water. This has resulted in a loss of wetland and riparian vegetation. Also, riverbank-protection structures along much of the North Fork have provided stable banks in areas that were formerly very dynamic. This unnaturally stable fluvial environment inhibits the regeneration of riparian vegetation, such as willow and cottonwood. Lack of an understory is evident, offering little replacement for the existing older, decadent overstory. Nonnative vegetation, such as rigput brome and cheatgrass, also dominate previously disturbed areas and have displaced native riparian species.

Hanging gardens are a unique, diverse and important community in the Colorado Plateau and Zion National Park. They occur on vertical, shaded sandstone faces where water seeps from the rock. Moisture and shading from direct sun provide habitat for species requiring cooler, wetter conditions. The Zion snail is one such species. This snail

is endemic to the park and has been found only within some hanging gardens along the North Fork of the Virgin River.

Weeping Rock is a primary visitor attraction, as are the hanging gardens at Emerald Pools. Other gardens line portions of the Narrows trail. A number of smaller gardens occur throughout the park where seeps and springs issue from the exposed sandstone. Some of the springs associated with hanging gardens, the Grotto, Temple of Sinawava, and Birch Creek, are used as park water sources.

Impacts on hanging gardens occur when people run their hands across the area, which removes vegetation and possibly rubs Zion snails, a rare, endemic species, off the surface. Trails and barriers already in place would continue to prevent contact with the gardens. The potential for damage or loss of vegetation based on increased visitation in fragile areas would be limited with the continuation of these mitigation measures.

MICROBIOTIC CRUSTS

Microbiotic crusts — an intricate network of cyanobacteria, algae, mosses, and fungi — contribute to many ecosystem functions, including soil stability, nitrogen fixation, nutrient contributions, seedling establishment, and plant-water relationships. These crusts are extremely intolerant of disturbance; just one step can destroy the delicate sheaths and filaments that hold the soil together. Without continued disturbance, crusts will begin reestablishing immediately; however, it may be several decades before mature crusts with algae and fungi develop. Continued activities that disturb the upper soil layer will have an adverse impact on microbiotic crusts.

Zion National Park does not have detailed field surveys to determine the distribution of microbiotic crusts. These crusts are,

however, typically associated with open canopies and sandy soil usually found in piñon/juniper forests and desert-shrub communities. Using existing vegetation and soils information, a model of the distribution of microbiotic crusts in the park predicts that they occur on 74,700 acres, or about 50% of the park.

MEXICAN SPOTTED OWLS

Zion National Park is within the Colorado Plateau Recovery Unit for the Mexican spotted owl (*Strix occidentalis lucida*), which is listed as a federally threatened species. The Mexican spotted owl reaches the northwestern limits of its range in this recovery unit. Owl habitat appears to be highly fragmented. In southern Utah, breeding owls primarily inhabit deep, steep-walled canyons and hanging canyons. They nest and roost in caves and on ledges. Most owls remain in the same territory year after year. They hunt primarily at night, and in the Colorado Plateau Recovery Unit they take more woodrats and fewer birds.

There are 87 known spotted owl territories on the Colorado Plateau (USFWS 1995). Zion has 17 (possibly 18) known territories, which are widely distributed. A spotted owl monitoring program for the park was initiated in 1995. Scientists believe that the relatively undisturbed lands of national parks on the Colorado Plateau, including Zion, serve as important centers for populating adjacent lands.

Potential threats to owls and their habitat in the northwestern portion of the Colorado Plateau Recovery Unit, including Zion, are recreation, overgrazing, and road development within canyons. Catastrophic fire and timber harvest within upland forests, which are potentially used for foraging, dispersal, and wintering, are additional threats (USFWS 1995).

SOUTHWESTERN WILLOW FLYCATCHER

The federally endangered southwestern willow flycatcher (*Empidonax traillii eximius*) nests primarily in mid-to-low elevation riparian habitat along rivers, streams, or other wetlands where dense growth of willows or other plants are present. There was one confirmed sighting of this neotropical migrant in the park in 1994 along the East Fork of the Virgin River. A 1998 survey of the park's riparian habitat that seemed capable of supporting flycatchers found no birds, though several pairs have been found downstream of the park along the Virgin River. One bird was located in the Birch Creek survey area in 1999.

VIRGIN SPINEDACE

The native fish community of the Virgin River has experienced population declines due to modification and loss of habitat, habitat fragmentation, and the introduction of nonnative species that compete with and prey on native species. This community is in relatively natural abundance only in Zion National Park and for a short distance downstream, as well as in a segment of the Santa Clara River. Native fish communities within the park are relatively intact, and include two minnows — the Virgin spinedace (*Lepidomeda mollispinis mollispinis*) and speckled dace (*Rhinichthys osculus*) — and two suckers — the flannelmouth sucker (*Catostomus latipinnis*) and desert sucker (*Catostomus clarki*).

Virgin spinedace are typically found in clear, cool, swift streams that have interspersed pools, runs, and riffles. They are primarily insectivorous, feeding on a wide range of insects and occasionally plant material and organic debris. Virgin spinedace feed on drifting prey in midwater and at the surface.

Because habitat for the Virgin spinedace has been altered throughout most of its range in the Virgin River, the major portion of the fish's remaining population lives within the park. Virgin spinedace are found along the North Fork of the Virgin River, East Fork of the Virgin River, a portion of Shunes Creek, and a very short section of North Creek just inside the park boundary. Along the North Fork, Virgin spinedace occur from the park's south boundary to the Temple of Sinawava and are suspected to occur at least as far upstream as Orderville Canyon, although this has not been confirmed (Valdez et al 1991). Their distribution along the East Fork is from the western end of Parunuweap Canyon to Parunuweap Falls.

The National Park Service is part of a coalition of federal and state agencies that signed a conservation agreement for the Virgin spinedace in 1995. The conservation agreement was developed to expedite conservation measures needed for the continued existence and recovery of the species.

DESERT BIGHORN SHEEP

Desert bighorn sheep were historically present in and around the park until the 1950s when they were extirpated due to hunting pressure, habitat loss, and disease. Transplanted bighorns were released in Parunuweap Canyon in 1973 and in lower Zion Canyon in 1978. The herd and its use are concentrated around lower Zion and Parunuweap Canyons, in the vicinity of their releases. Their range extends north, from Parunuweap Canyon to just north of the Zion-Mt. Carmel Highway. Main lambing areas are within Parunuweap and Shunes Canyons. Bighorns tend to occupy habitat consisting of open cliffs and immediately adjacent steep, open hillsides with herbaceous vegetation. They escape predators best on steep, cliff terrain; they

tend to avoid forested areas and low lying, flat terrain where they are vulnerable to predation.

There are no present threats to the sheep because very few uses are allowed within the sheep's habitat. No use is allowed in the lambing areas of the park.

THE NATURAL SOUNDSCAPE

An important resource at Zion National Park is the natural soundscape. Sometimes referred to as "natural quiet" and "natural ambient sounds," the natural soundscape includes not only the quiet but the entire symphony of natural sounds found in the park, including: silence, the songs of canyon wrens, dripping water at hanging gardens echoing off the canyon walls, the call of a raven or piñon jay from a mile away, the rustle of wind in the trees, the buzz of insects, and the roar of river rapids.

In August/September 1995 and in October 1998, the natural ambient sound environment was measured at several locations in the park (HMMH, 1995 and 1998). The results are summarized in table 8, expressed in A-weighted decibels (dBA), a standard unit of measurement for sound tailored to normal human hearing, and the percentage of time when only natural ambient sounds were audible to an attentive observer. Each 10 dBA increase on the decibel scale represents an increase of 10 times the amount of sound energy, which is perceived by humans as a doubling of the loudness. As a point of reference, a conversation between two people would typically measure about 60 dBA, and typical suburban daytime readings would be in the 50-60 dBA range. Sound levels in the 20-30 dBA range would be found late at night inside a single family residence, with all windows closed, no internal noise sources operating (such as

heating or ventilating systems) and no local traffic in the vicinity.

The L_{50} is the median value of all the natural ambient levels measured, and the L_{90} is the natural ambient level exceeded 90% of the time by other natural sounds. Past measurements in the parks have shown that the L_{50} is a good single number approximation of a park's natural ambient sound conditions. The lower the dBA number, the "quieter" the soundscape.

A single decibel value, however, does not provide much useful information about how audible a noise source might be in a given natural soundscape. This is because sound is composed of a complex pattern of sound energy levels that vary continuously and instantaneously across a spectrum of sound frequencies. The most important factors affecting audibility are the frequency-based sound levels of both the particular noise source and the ambient or "background" sound. Even in the presence of a very "loud" natural ambient sound source, such as a waterfall, a noise source with a much lower single decibel value may be clearly audible because it has higher energy levels than the ambient sound in a specific part of its frequency spectrum. The difference between the energy level of the noise source and the background sound (in this case, the natural ambient sound) in each of the many distinct frequency bands is what determines whether and how much the noise source will be audible. For these reasons, single decibel values provide useful comparisons of average total sound energy, but they do not relate well to audibility. In addition to the data shown in table 8, the park staff also possesses digital recordings and one-third octave band data for several of the sites from which audibility can be assessed.

Based upon the measurements summarized in table 8, the average natural ambient value is 22 dBA for the vast majority of Zion National Park, which indicates that Zion is generally a very quiet place. The vast majority of park lands are classified as having sparse/open vegetation (i.e., bare rock, grasslands, desert scrub, pinyon-juniper) with no influence from the sound of running water. Eight of the 11 sites shown in table 8 were in that vegetation class, and the average natural ambient decibel value for those sites was 22 dBA. Riparian sites generally have higher ambient sound levels, but because they represent less than 5% of the park's land area, they were not used in calculating the average natural ambient value. It also should be noted that the 1995 data was collected under wind conditions normal for the season, whereas the 1998 data was influenced by unusually strong winds. If all the data had been collected under typical wind conditions, it is likely that the average natural ambient decibel value would be even lower.

The opportunity to experience Zion's natural soundscape unimpaired by the sounds of human civilization is an important part of the overall visitor experience, especially as it contributes to the solitude and wilderness experience that is integral to much of the park.

Human sound sources, such as cars, buses, audio devices, generators, aircraft overflights, and peoples' voices, can have greater impacts in very low-ambient-level natural soundscapes, like Zion, than would the same levels of noise in areas of higher-ambient-level soundscapes, such as urban environments.

Table 8: Measured Natural Ambient Sound Levels at Zion National Park

Measurement Site Location ¹	Date of Measurement (Number of Hours Measured)	Environment (Primary Ambient Sound Source) ²	One-hour L_{50} Levels (dBA) for Natural Ambient Only ³	One-hour L_{90} Levels (dBA) for Natural Ambient Only	Percent Time Only Natural Ambient Sounds Were Audible
Tabernacle Dome	26-Aug-95 (2) 6-Sep-95 (3) 15-Oct-98 (1) 16-Oct-98 (1)	Pinyon-juniper (wind, water, wildlife, talking, storm)	23, 25 23, 21, 25 29 44 Ave L_{50} = 27	23, 22 22, 20, 21 26 34 Ave L_{90} = 24	69%, 75% 48%, 62%, 96% 37% 44%
Watchman	24-Aug-95 (1), 25-Aug-95 (1), 28-Aug-95 (2)	Scrub, open (wind, other)	29 30 30, 28 Ave L_{50} = 29	27 28 28, 26 Ave L_{90} = 27	22% 18% 36%, 47%
Watchman ⁴	15-Oct-98 (1), 22-Oct-98 (1)	Scrub, open (other/crickets), birds, wind)	40 35 Ave L_{50} = 38	38 33 Ave L_{90} = 36	77% 31%
Angel's Landing (Main Canyon River Flat)	16-Oct-98 (1), 23-Oct-98 (1)	Cottonwood (wind, water)	41 46 Ave L_{50} = 44	39 44 Ave L_{90} = 42	46% 52%
Angel's Landing (Big Bend shuttle pullout - parking lot) ⁵	5-Sep-95 (2)	Parking lot (water, talking)	52, 47 Ave L_{50} = 50	45, 44 Ave L_{90} = 45	24%, 12%
East Mesa	19-Oct-98 (1)	Pinyon-juniper (wind)	35	31	65%
East Canyon-Petroglyph	30-Aug-95 (2), 31-Aug-95 (2)	Rocks, sparse pines (wind, other)	27, 25 18, 16 Ave L_{50} = 22	21, 17 15, 15 Ave L_{90} = 17	76%, 87% 62%, 79%
Main Canyon (top of canyon above Scout's Landing)	1-Sep-95 (2), 7-Sep-95 (2)	Rocks, sparse scrub (wind, other, water, wildlife, talking)	20, 26 19, 22 Ave L_{50} = 22	17, 17 17, 19 Ave L_{90} = 18	69%, 77% 69%, 70%
Main Canyon (Emerald Pool) ⁶	11-Sep-95 (3)	Cliffs, rocks (water, wildlife)	36, 35, 35 Ave L_{50} = 35	33, 35, 35 Ave L_{90} = 34	81%, 87%, 80%
Main Canyon (River Flat) ⁷	26-Aug-95 (1), 5-Sep-95 (1)	Cottonwood, open (water)	42, 42 Ave L_{50} = 42	41, 39 Ave L_{90} = 40	32% 31%
Main Canyon (above Weeping Rock in Echo Canyon)	29-Aug-95 (2)	Scrub (other, talking)	23, 22 Ave L_{50} = 23	22, 21 Ave L_{90} = 22	56%, 61%
Kolob, Timber Creek	27-Aug-95 (2), 10-Sep-95 (1)	Pinyon-juniper (wind, other, wildlife)	30, 21 24 Ave L_{50} = 25	23, 17 21 Ave L_{90} = 20	88%, 80% 95%

Source: memorandum from Nicholas P. Miller of HMMH, Inc., to Rick Emmert of the National Park Service, dated October 18, 2000, with the subject "Ambient Sound Levels, Zion National Park, Reference HMMH Job No. 295860.17."

¹ Only sites with natural ambient measured greater than 10% of the time are presented. Five hours of measurements at Coal Pits and 3 hours at Watchman are not presented for this reason.

² "Wind" means that wind created sound in the foliage present. "Water" means sound was produced by flowing water. "Other" generally means the levels were low and unidentifiable as to specific source.

³ For both the L_{50} and L_{90} values shown in the table, one-second Leq measurements were used to calculate the values for each one-hour measurement period.

⁴ This site experienced heavy insect and bird activity during the measurement periods considered unusual for the vast majority of the park. For that reason, data for this site was not used in calculating the average natural ambient value for the majority of the park.

⁵ Because riparian habitat and water noise such as is found at this site represents less than 5% of the park, data for this site was not used in calculating the average natural ambient value for the majority of the park.

⁶ The amount of talking at this parking lot site was judged sufficient to invalidate the results for use in estimating the natural ambient. Where talking is listed for other sites, it was much less than at this site.

⁷ Because hanging gardens and water noise such as is found at this site represents less than 5% of the park, data for this site was not used in calculating the average natural ambient value for the majority of the park.

⁸ Because riparian habitat and water noise such as is found at this site represents less than 5% of the park, data for this site was not used in calculating the average natural ambient value for the majority of the park.

VISITOR USE

For many visitors, a visit to Zion is a stop on a visit to "the Grand Circle," a region of spectacular scenery and diverse recreational opportunities, including several national parks, national forests, state park areas, and Indian reservations in northern Arizona and southern Utah. Most visitors (66%) spend less than a full day at Zion National Park.

ACCESS TO THE BACKCOUNTRY

Zion encompasses 148,016 acres; however, much of the park is inaccessible to the vast majority of visitors due to the park's steep topography. The map on page 129 depicts areas within the park that are considered generally inaccessible. These areas are defined as slopes greater than 30 degrees (excluding trail or route corridors that traverse such slopes) and areas that are entirely surrounded by 30 degrees or greater slopes that have no trails or routes that would offer access to these isolated areas.

Approximately 83,336 acres or 56.3% of the park is accessible, even though many of these routes require advanced climbing and/or canyoneering skills. Thus for the average hiker, the areas of inaccessibility are much greater than depicted on the map, which shows a very conservative estimate of inaccessible areas.

RANGE OF VISITOR ACTIVITIES AND EXPERIENCES

Zion's spectacular scenery attracts people to both Zion Canyon and the Kolob Canyons. Both areas offer a variety of recreational opportunities and activities. The primary visitor activities in both areas include driving scenic roads, stopping at pulloffs, taking photographs, and taking short hikes. A typical

Terms and Caveats

The term "visitor experience" refers to everything that happens to visitors while visiting Zion — everything they do, learn, feel, and perceive.

Information on visitor activities and experiences comes from staff observations and from two visitor surveys. A Visitor Services Project Visitor Survey (Littlejohn 1993) was conducted at Zion National Park during July 12 to 18, 1992. (This study is hereafter referred to as the 1992 visitor survey.) The Zion National Park Visitor Utilization Study (Shacklett 1995) collected data from August 26 to 28, 1994. (This study is hereafter referred to as the 1994 study.) Both studies were conducted under short time frames and involved small numbers of visitors (i.e., a total of 647 questionnaires were distributed and 528 were returned). Thus, the results may not be truly indicative of visitor activities and experiences.

visit to Zion includes a few hours spent in Zion Canyon, a stop at the visitor center, and a short hike on one of the trails in Zion Canyon. The 1992 visitor survey found the most common visitor activities at Zion were photography and painting or drawing (88% of total groups), stopping at scenic pullouts (87%), hiking less than two hours (50%), hiking more than two hours (29%), picnicking (28%), tubing or wading in the river (23%), and camping in a developed campground (20%). Ranger-led talks were attended by six percent of the groups responding to the survey and two percent of the responding groups attended a ranger-led walk. Visitor groups often participated in more than one activity.

While the majority of visitors do not participate in backcountry camping, canyoneering, horseback riding, or climbing, some visitors go to Zion specifically to participate in these activities. The park's natural resources offer hiking experiences ranging from easy nature walks to moderate day hikes to strenuous multiday backpacking

opportunities, and a variety of climbing and canyoneering opportunities. Horseback riding is allowed on certain trails in the park and a concessioner provides guided horseback rides on the Sand Bench trail during the summer. Bicycling is restricted at Zion to the Pa'rus trail and paved roads. Other park activities include kayaking, picnicking, and swimming.

No commercially guided activities are permitted in the park. Park personnel provide short guided hikes in the main canyon and offer programs at the visitor center and campground through the summer season.

Visitation and backcountry use have been increasing at Zion National Park (see the following section on visitor use). This increase could be affecting the experiences of some visitors, although there is little data about the expectations of Zion visitors that would determine their perception of crowding or their actual experiences. Park staff have received comments indicating that some visitors feel that Zion is too crowded in certain areas and at certain times and that it is too difficult to experience solitude and quiet. The 1992 visitor survey found that 37% of visitors felt crowded in the park. The 1994 visitor study found that although visitors had serious concerns about parking and crowding, these concerns had a minimal impact upon the impressions of their experience. Apparently, some people do not seem to be bothered by the increased visitation.

The way that visitors experience Zion changed dramatically when the shuttle system in Zion Canyon became operational (see below). While the shuttle directly affects the way visitors experience Zion Canyon, it may also cause a redistribution of visitation within the whole park. For example, visitors who wish to access the park in their vehicles or visitors who do not have the time or inclination to use the shuttle may choose to visit the Kolob Canyon area, the Kolob-Terrace Road, or areas along the Zion-Mt. Carmel Highway

instead of or in addition to Zion Canyon. This could result in more visitation and possibly more crowding in those areas.

South Entrance and Main Zion Canyon Area

Zion Canyon is by far the most visited area of Zion National Park. The 1994 visitor study and the 1992 visitor survey found that the following percentages of Zion visitors went to these locations in Zion Canyon: Zion Canyon Road (76%), Zion Canyon visitor center (64-73%), Temple of Sinawava (39-57%), Zion Lodge (46-54%), the Riverside Walk (47%), and the West Rim trail (41%). During the peak season, visitors often can not visit some of the main attractions and trails in Zion Canyon because they can not find parking.

Approximately two-thirds of visitors in private vehicles and one-third of the visitors arriving in tour buses access Zion Canyon through the park's south entrance. Once in Zion Canyon, most visitors drive part or all of the road, stop at the visitor center and the lodge, and perhaps take a short hike. The North Fork of the Virgin River is another of Zion Canyon's major visitor attractions. Thousands of visitors come to the river to cool off, swim, wade, or walk along the river. Some kayaking in the Virgin River occurs during spring runoff.

Visitors can stay overnight in Zion Canyon at the Zion Canyon Lodge or camp at one of two frontcountry campgrounds near the south entrance to the park. Some visitors consider an overnight stay in the park to be an integral part of their Zion experience. The lodge has been in operation for more than 80 years, and provides overnight accommodations, food services, and a gift shop. The lodge and the campgrounds are usually full during peak season. Picnicking is available in Zion Canyon at the Grotto.

As noted above, the way visitors experience Zion Canyon changed dramatically when the

shuttles started operating. During the peak season, and eventually year-round, visitors park their vehicles at the south entrance to the park and use shuttle buses to travel around the canyon. Lodge guests continue to be able to use their private vehicles to access the lodge. A new transportation center, including a parking area, restrooms, interpretive exhibits, backcountry permit area, and a book sale area, provides visitors with an overview of park themes and help them plan their visit. The current visitor center will become a museum focusing on the park's human history. Several other new facilities support the shuttle system, including a new bus maintenance area in Sammy's Canyon, and several pullouts, trailheads with parking lots, shuttle stops along the Zion Canyon Road, and an emergency service facility.

The *Zion Canyon Transportation System Environmental Assessment* and "Finding of No Significant Impact" (NPS 1997a) analyzes the impact of the transportation system on the visitor experience. The shuttle's effect on the visitor experience largely depends on how the shuttle system operates and on visitor expectations and values. Park managers believe that the shuttle system has improved the visitor experience, reducing crowding, and improving opportunities for interpretation. It is anticipated that reduced traffic provides a more leisurely and safe visit to Zion Canyon with less noise and traffic. Some visitors may find the less crowded and quieter condition more appealing. For example, visitors stop at the major attractions of the canyon without having to compete for parking places.

On the other hand, some visitors may not be bothered by or may even prefer having many people around. The shuttle system has made the Zion Canyon visitor experience more structured, eliminating the opportunity for unprogrammed sightseeing stops. Visitors are no longer able to experience the freedom of movement associated with the use of a personal vehicle.

Definitions of Recreational Use Terms

Recreation visits are the entries of persons, for any part of a day, onto lands or waters administered by the National Park Service for recreation purposes.

Nonrecreation visits include persons going to and from inholdings, commuter and other through traffic; trades people doing jobs within the park; any civilian activity a part of or incidental to the pursuit of a gainful occupation (e.g. guides); government personnel (other than NPS employees) with business within the park; citizens using NPS buildings for civic or other local government business or attending public meetings; and outside research activities if independent of NPS legislated interests (e.g. meteorological research).

Beginning in 1993, nonrecreation visitor use was calculated at a fixed rate of 60 nonrecreation visits per day. This adjustment was made due to a review and revision of the official counting and reporting instructions for the park.

Total visits equals recreation visits plus nonrecreation visits.

East Entrance and the Zion-Mt. Carmel Highway Area

Approximately one-third of visitors in private cars and two-thirds of visitors in tour buses enter Zion through the east entrance. The 1994 visitor study found that 65% of park visitors visited the Zion-Mt. Carmel Highway and 48% of park visitors stopped at Checkerboard Mesa. Visitation to sites along the Zion-Mt. Carmel Highway is expected to increase once the Zion Canyon shuttles are operating.

There are minimal visitor facilities at the east entrance and along the Zion-Mt. Carmel Highway — the only facilities are pullouts, trailheads, a picnic area, and the entrance station. During the peak season there can be considerable congestion and crowding of vehicles at the tunnel.

Kolob Canyons Road Area

This area provides an opportunity for visitors to experience beautiful scenery from their vehicle or on foot without the crowds typically experienced in Zion Canyon. A 5-mile scenic drive begins behind the small visitor center. Parking lots and trailheads along the road provide access to the Middle and South Forks of Taylor Creek, the La Verkin/Kolob Arch trail, and the Timber Creek overlook and picnic area.

The 1992 visitor survey found that 19% of Zion visitors went to the Kolob Canyons area. Visitation to this area tripled between 1984 and 1995 according to park statistics. Visitation may increase in the Kolob Canyons area once the Zion Canyon shuttles begin operating. According to the 1992 visitor survey, the most common activities in the area were driving the scenic road (91%), visiting the Kolob Canyons visitor center (64%), using the restrooms (61%), getting information (54%), and hiking (28%).

The Kolob-Terrace Road Area

The Kolob-Terrace Road is a county road outside the park and is a link between Washington and Iron Counties. The road provides a scenic drive for visitors who want to get off the beaten path. Because the road has minimal traffic, this area provides a more rustic experience. It also provides access to trailheads serving the Hop Valley, Wildcat Canyon, Connector, Left Fork, and Grapevine trails, thus providing opportunities for hiking and canyoneering in these areas. The road also provides access to the Lava Point campground.

Lava Point Area

Lava Point provides opportunities for primitive camping in a smaller more rustic campground than the campgrounds in Zion

Canyon. It is used primarily by small groups of tent campers and is a popular destination for local residents. During the summer, the campground is full every night. A small picnic area is located at Lava Point. The 1992 visitor survey found that 3% of park visitors went to Lava Point.

Recommended Wilderness

Most visitors do not stay overnight in the park and do not enter the Zion backcountry. However, some visitors come to Zion specifically to experience the Zion wilderness, seeking out opportunities to backpack, climb, horseback ride, and explore canyons. With the exceptions of the Narrows, the Left Fork of North Creek, the West Rim, and the Kolob area, and several areas where horses and saddle stock are restricted, visitors can generally experience the Zion backcountry without limits on where they can camp. But as backcountry use at Zion grows, visitors expecting solitude may not always get it in some areas due to the number of other visitors.

SCENIC RESOURCE EXPERIENCES

For many visitors, enjoying the views of Zion's spectacular scenery without signs of modern development is part of a quality experience. Several park facilities — notably the visitor centers in Zion Canyon and in the Kolob Canyons district, the campgrounds, the roads, Zion Canyon Lodge, radio repeaters, and park housing — affect the visitor's ability to experience scenic resources.

Besides facilities within the park, developments on private land outside the park have the potential to affect the views from Zion, and therefore the experiences of Zion visitors. Currently, the modern development outside the park that is visible from within the park is limited. Several notable exceptions include the town of Springdale, Highway 9 and developments along the road corridor, and Interstate

15. As population and development around Zion continue to increase, visual intrusions outside the park will likely increase.

ANNUAL AND MONTHLY VISITOR USE

Zion is open all year. The peak-use season runs from April through October, with the pattern of monthly visitor use stairstepping up and down on an annual basis. In 1997, more than 82.5 % of the annual visitation occurred during the peak season. During August, the busiest month, park staff recorded an average of 11,839 recreational visits each day. In contrast, during December, daily visitor use averaged only 1,941 recreational visits. Nonrecreational use is reported as a constant 60 visits per day.

From 1986 through 1993, visitor use at the park, measured as recreational visits, rose each year (figure 1). The increases ranged from 0.17% to 8.76% per year, with the average increase being 4.71%. In 1992, park staff made several modifications to the counting and reporting procedures to make them consistent with accepted NPS standards. In addition to setting nonrecreational use at a fixed figure per day, the persons-per-vehicle multipliers were reduced somewhat. These changes resulted in a dramatic reduction in the amount of nonrecreational visits reported for the park. Park staff also recorded a corresponding reduction in the total number of visits. The changes did not significantly affect the annual amount of recreational use reported, however. Although the number of recreational visits declined from 1993 to 1994, the change in visits from 1993 to 1997 averaged a positive 0.92%.

OVERNIGHT VISITOR USE

Park staff measure overnight visitor use of the park as overnight stays. An overnight stay is considered to be one visitor spending one night within the park for recreational purposes. Table 9 lists overnight stays in the park from 1986 through 1997; table 10 details monthly overnight use for 1997. Overnight stays are counted separately from recreational visits, so they do not directly correspond to recreational visits.

The determination of overnight use is also based on the official NPS counting and reporting procedures for Zion National Park, which include the use of various multipliers to calculate some types of overnight use, such as tent, RV, and backcountry camping and concessioner lodging. The decline in overnight use from 1992 to 1993 was mostly the result of the changes that were made to Zion's counting and reporting instructions by the NPS Public Use Statistics Program Center. Two more years of decline followed and then, in 1996, an increase in total overnight stays was reported. In 1997 overnight stays again declined.

Compared to the amount of recreational visits (2,445,534 in 1997), it is readily apparent that overnight use of the park (272,492 overnight stays in 1997) accounted for only a small portion of the park's recreational use.

Overnight stays follow the same annual pattern as recreational visits. Relatively little overnight use occurs in the winter. Increased overnight use begins in March and stays relatively high from April through October.

TABLE 9: OVERNIGHT STAYS, 1986-1997

Year	Park Tent Camping	Park RV Camping	Park Backcountry Camping	Concessioner Lodging	Total Overnight Stays	% Change from Previous Year
1997	111,610	54,684	19,237	73,603	245,776	-8.6%
1996	121,650	61,884	18,384	67,096	269,014	3.7%
1995	110,206	66,254	20,138	62,869	259,467	-3.2%
1994	116,600	62,719	14,425	74,439	268,183	-2.2%
1993	116,596	75,447	15,394	66,720	274,157	-13.0%
1992	139,763	97,017	14,726	63,780	315,286	2.0%
1991	130,285	101,314	13,140	64,251	308,990	11.1%
1990	117,157	97,276	10,910	52,717	278,060	0.2%
1989	113,034	97,344	10,620	56,619	277,617	1.2%
1988	112,451	100,441	7,538	53,894	274,324	10.6%
1987	91,911	98,116	7,707	50,324	248,058	10.2%
1986	88,084	82,649	7,807	46,640	225,180	

Source: National Park Service, Public Use Statistics Program Center.

Figure 1. Annual Recreation and Nonrecreation Use, 1986 to 1997

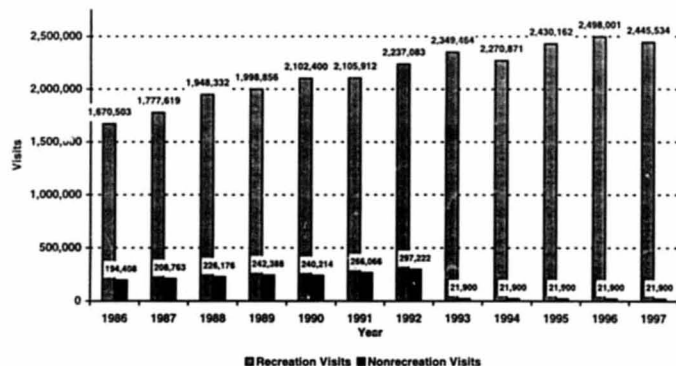


TABLE 10: OVERNIGHT STAYS FOR 1997

Month	Park Tent Camping	Park RV Camping	Park Backcountry Camping	Concessioner Lodging	Total Overnight Stays
January	773	336	116	2,162	3,387
February	918	637	230	2,692	4,477
March	3,613	2,138	3,084	5,234	14,069
April	9,558	6,680	1,403	6,564	24,205
May	11,314	6,668	3,533	6,574	28,089
June	17,836	8,505	1,114	9,899	37,354
July	19,032	6,037	1,041	8,786	34,896
August	18,925	6,339	1,374	9,168	35,806
September	15,696	7,618	1,213	9,208	33,735
October	9,888	6,856	4,356	6,974	28,074
November	3,008	2,539	1,410	4,011	10,968
December	1,049	331	363	2,331	4,074
Total	111,610	54,684	19,237	73,603	259,134

Source: National Park Service, Public Use Statistics Program Center.

The frontcountry areas provide developed facilities for overnight use. Zion Lodge has 40 cabins and 81 motel rooms available to the public. It is usually filled to near capacity during the summer. The lodge receives relatively low levels of use during the winter.

The Watchman and South campgrounds, both of which are near the south entrance to the park, offer recreational vehicle and tent camping (228 and 128 sites, respectively). These facilities provide fire grates, picnic tables, water, restrooms, and a sanitary dump station for trailers. Loop D of the Watchman campground also has electrical hookups. Showers are not available in either facility. Watchman campground is open year round, while South campground is open only in the summer. Group camping is available by reservation for groups of 9 to 40 people. There are seven group sites with a total capacity of 200 people. Camping in the frontcountry is limited to designated sites and to a maximum of 14 days at one site.

There is a primitive campground with six sites at Lava Point. Open from May to October, this

campground has fire grates, tables, and toilets but no water.

Backpacking and camping in the backcountry is available throughout the park. Camping in the backcountry is limited to 14 days at one site. There are no designated campsites (except in the Narrows, along the La Verkin Creek/Hop Valley trails, and along the West Rim trail) and no facilities are provided.

VISITOR USE PROFILE

A scientifically valid and reliable visitor profile is not currently available for Zion. However, some insights into a profile for park's visitors are available from the 1992 visitor survey conducted during July 12 to 18 (Littlejohn 1993). As noted previously, the small population size, the short time frame during which data were collected, and a lack of a representative sample of the primary visitor season (April through October), limit the conclusions that can be drawn about the general visitor population. Nevertheless, this is the best data available.

The results of the survey were that 67% of the respondents indicated that they were visiting the park as a family group. Group size was usually two (43% of respondents) or four (22% of respondents). About one-third (32%) of respondents were between 36 and 50 years old; 22% were 15 years old or younger. Most of the respondents (69%) were first time visitors to the park.

U.S. visitors came from 44 states plus the District of Columbia and Puerto Rico. California provided 24% of the visitors, while Utah provided 13%; Nevada, 7%; and Arizona, 5%.

Visitors from foreign countries made up 21% of the total number of visitors responding to the 1992 survey. The highest percentages of foreign visitors were from Germany (38%), the Netherlands (13%), France (12%), and Switzerland (9%).

Regarding length-of-stay, two-thirds of the visitor groups surveyed were day-use visitors and spent less than one day in the park. Of these visitors, 22% were in the park for less than two hours, 35% spent three to four hours in the park, and 44% stayed five or more hours. One-third of the visitor groups stayed for one to four days. Less than 1% stayed for five or more days.

Another source of visitor demographics is the 1994 visitor study (Shacklett 1995). Again, the short time frame for data collection (August 26 through August 28, 1994) and the lack of a representative sample limit the applicability of this study's results — the data collected allow inferences to be made about the study period only. However, the 433 surveys that were collected from visitors to both Zion and Kolob Canyons provide some information on who visited the park during the brief survey period.

This survey indicates that 24% of the visitors were with family groups, whereas the rest

(76%) were unrelated adults. The average group size was 2.9 persons. Respondents were equally divided between first time visitors and repeat visitors.

The visitors responding to the survey came from west of the Mississippi (48% of the total), east of the Mississippi (25%) and from foreign countries (27%). Respondents indicated that they had or were planning to spend an average of 1.8 days visiting the park. The average length of stay was 3.4 hours for visitors who stopped within the park (87% of survey respondents) and only 42 minutes for those who simply drove through the park (13%).

PROJECTIONS OF POTENTIAL VISITOR USE

Park use is affected by a variety of factors. Forecasted use for Zion was based solely on past use, which was then projected forward over time. This method implies that whatever factors influenced visitation in the past will continue to do so in the future, and that any changes in those factors will follow historic patterns. The extrapolation of a past trend only forecasts a trend pattern, not the causes of the trend.

It is assumed that visitation to Zion National Park, if unmanaged, would increase over the long term; since this seems to be the general trend for most units within the national park system. The Park Service developed a forecast using a simple straight line projection based on two different historic trends. The forecast uses growth factors of 1%, 3%, and 5% to derive the low, medium, and high estimates of recreational visits. These rates of growth are based on historic growth observed prior to and after 1993. From 1986 to 1993 the average increase in recreational visits to the park was approximately 5%. Then after a change in the counting and reporting procedures in 1993, the average rate of growth was about 1%, even

with a reported decline in visitation from 1993 to 1994. A middle ground rate for 1986 to 1996 approximates 3%. These growth factor rates provide a range of projected visitation figures that is considered reasonable over the next few years. The further out in time one projects, the greater the range between the high and low projections and the less reliability that can be ascribed to them.

Forecasting in this manner is subject to a high probability of error because the method used is simplistic, relatively little data are available, there is no cause and effect relationship between past and future use, and there is a potential for change in visitor use because of the shuttle system. The addition of another year's visitation figures (additional data) may affect the projections. For these reasons, a range of values was reported and caution is warranted when interpreting and using the results.

Table 11 and figure 2 present the projected visitation figures. At the high rate of growth of 5%, compounded annually, visitor use of the park would double in about 15 years. The medium growth rate of 3% projects an additional 500,000 recreational visits in 5 years

and an increase of more than 1,200,000 recreational visits in 10 years. Such high levels of visitation could only be accommodated within the park through significant changes in park management. It is expected that managed visitation would reach a plateau, with some fluctuation, and then level off. In all likelihood, it would become necessary to manage visitor use at a level that is sustainable both in terms of protecting the resource and providing quality visitor experiences. Uncontrolled growth in visitor use would have serious negative impacts on the resources of the park and the quality of the visitor experience.

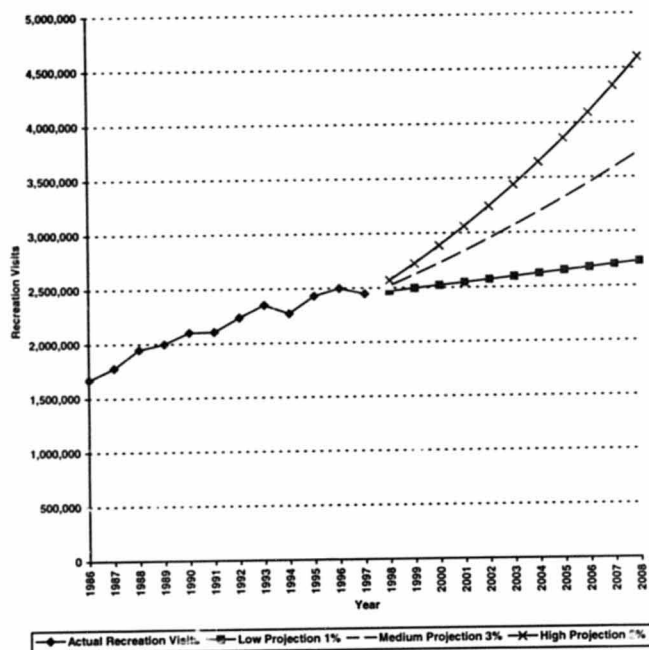
The human element contributes to the difficulty in projecting future recreational use. That is, visitor use patterns could change in response to the actions presented in the alternatives. For instance, as a response to either carrying capacity limits or crowded conditions during the peak season, some visitors could choose to visit the park during the shoulder seasons rather than during the summer. Alternatively, weekdays could become as popular as weekends during the peak use season. So even though limits on visitor use on any

TABLE 11: POTENTIAL RECREATIONAL USE, 1996-2008

Year	Projected Recreational Visits		
	Low (1%)	Medium (3%)	High (5%)
2008	3,729,000	4,599,000	4,599,000
2007	2,701,000	3,585,000	4,338,000
2006	2,675,000	3,447,000	4,093,000
2005	2,648,000	3,315,000	3,861,000
2004	2,622,000	3,187,000	3,642,000
2003	2,596,000	3,065,000	3,436,000
2002	2,570,000	2,947,000	3,242,000
2001	2,545,000	2,833,000	3,058,000
2000	2,520,000	2,724,000	2,885,000
1999	2,495,000	2,620,000	2,722,000
1998	2,470,000	2,519,000	2,568,000

Source: National Park Service, Denver Service Center.

Figure 2: Actual and Projected Recreational Use, 1986 to 2008



Source: National Park Service, Public Use Statistics Program Center, and Denver Service Center.

particular day could be established, increases overall visitor use of the park are still possible.

OTHER RECREATIONAL FACILITIES ADJACENT TO THE PARK

Southwestern Utah has numerous and diverse outdoor recreational opportunities. Various government land agencies manage large recreational areas within a few hours drive of Zion. Varied topography and ecosystems, as well as extraordinary scenic qualities make this region attractive to tourists and outdoor recreation enthusiasts from all over the country. The following section briefly describes major recreational areas of the region.

National Park Service

Capitol Reef National Park, 204 miles from Zion, is named for the reef-like cliffs capped by white sandstone formations resembling the U.S. Capitol. The park protects a portion of the Waterpocket Fold in addition to petroglyphs and the remains of an early Mormon pioneer settlement. Capitol Reef offers opportunities for hiking, horseback riding, camping, ranger-guided activities, scenic drives, and nature study.

Bryce Canyon National Park is located 86 miles from Zion. It includes some of the earth's most colorful rocks, sculpted by erosion into fantastic forms. Recreational activities include scenic drives, hiking, camping, ranger-guided activities, guided horseback riding tours, and nature study.

Cedar Breaks National Monument is 76 miles northeast of Zion. This monument encompasses a multicolored limestone amphitheater eroded to depths of nearly 2,500 feet. Hiking, camping, and picnicking are popular activities. The road through the monument is not open during the winter.

Pipe Spring National Monument is located 63 miles south of the park on the Kaibab-Paiute Indian Reservation in Arizona. A fort, built in the 1870s by Mormon pioneers, laid claim to one of the few natural springs in the area. The fort, several ranch buildings, living history demonstrations, and an interpretive trail offer a glimpse of American Indian and pioneer life in the Old West.

Lake Mead National Recreation Area, about 120 miles southwest of Zion, encompasses more than 1 million acres of rugged canyon country on the Colorado Plateau. Lake Powell stretches 186 miles behind Glen Canyon Dam and provides a variety of water-recreation activities.

Glen Canyon National Recreation Area, approximately 120 miles east of the park, includes Lake Mead, formed by Hoover Dam, and Lake Mohave, by David Dam, and over 1 million acres of surrounding desert and mountains. Recreational activities include boating, swimming, fishing, hiking, and scenic driving.

Bureau of Land Management

Grand Staircase of the Escalante National Monument, established in 1996, encompasses 1.7 million acres in southwestern Utah. The majority of the monument is rugged, remote, and undeveloped. Opportunities exist for hiking, camping, backpacking, mountain biking, and horseback riding. Guided activities include horseback riding, hiking, mountain biking, fishing and hunting trips.

U.S. Forest Service

Dixie National Forest covers 1,900,000 acres in southwestern Utah. Recreational opportunities include camping, hiking, fishing, hunting, viewing scenery, horseback riding, studying nature, picnicking, snowmobiling, and participating in water-based activities. A total

of 83,000 acres of the forest are designated wilderness.

State of Utah

Iron Mission State Park, approximately 60 miles north of Zion, provides a glimpse of what life was like for pioneers working an iron mine during the 1850s. The park's museum houses a collection of wagons, machinery, pioneer tools, and housewares as well as a collection of Southern Paiute clothing and tools. The park has facilities for picnicking.

Gunlock State Park, located 57 miles west of Zion, offers opportunities for year-round water sports, boating, and fishing.

Snow Canyon State Park, located 51 miles west of Zion, protects unique and scenic geological features such as volcanic cones, sand dunes, sandstone cliffs, and lava caves. It provides opportunities for hiking, horseback riding, bicycling, and camping.

Coral Pink Sand Dunes State Park, located 36 miles southeast of Zion, is a wide-sweeping expanse of coral-colored sand. The park provides opportunities for picnicking, hiking, off-highway vehicle use, and camping.

Qual Creek Reservoir State Park, about 23 miles west of Zion, also offers year-round opportunities for camping, picnicking, boating, and fishing.

SOCIOECONOMIC ENVIRONMENT

Zion National Park is in eastern Washington County, western Kane County, and eastern Iron County. Washington and Kane Counties are most closely linked economically (via tourism) to Zion National Park because the eastern and southern access points to the main visitor use areas of the park (Zion Canyon and the Zion-Mt. Carmel Highway) are located in these counties.

POPULATION

Between 1980 and 1990 the United States' population grew by approximately 9.8%, and from 1990 through 1995, by more than 5.4%. During these same time periods, the population of Utah grew at nearly double the national rates. An important characteristic of the three-county region within which Zion is situated has been its impressive growth. Since 1980 the three counties have experienced even higher population growth rates than either the state or national averages.

Specifically, Washington County, containing the city of St. George and most of Zion National Park, has experienced tremendous growth, expanding by more than 42,000 people (nearly 160%) in just 15 years — 1980 to 1995 (Bureau of Economic Analysis 1997). Most of this growth has centered on the St. George area of the county; the city has expanded by approximately 11,000 people from 1990 to 1994 (St. George Area Chamber of Commerce 1996). The mild climate, community facilities and services, and proximity to several national parks and other public lands offering a wide variety of outdoor recreational opportunities have all contributed to the area's growth. The St. George area has been known as a retirement destination, but in recent years the area has attracted many new businesses and job seekers including young families.

Population growth is expected to continue in Washington County through the life of this plan.

ECONOMY

The primary economic sectors in terms of earnings are identified in table 12. Tourism is separated among services (such as lodging and restaurants) and retail trade (e.g., souvenir stores). The jobs provided by the service sector, especially tourism, typically are not high paying. Tourism also tends to be highly seasonal in nature. So while tourism may be an important aspect of the local economy in terms of total earnings and number of jobs, many individuals employed in this economic sector may not be particularly well off.

TRANSPORTATION/ACCESS

Zion National Park is one of the many destination parks located in southern Utah and northern Arizona far from the major population centers of the country. However, tens of thousands of domestic and foreign visitors are undaunted by these distances and arrive by various types of motor vehicles every year. Interstate 15, running north to south, is the major highway connecting the southwestern corner of Utah with the rest of the nation. Via this route, Zion National Park is 42 miles from St. George, and St. George is connected with Salt Lake City to the north and Las Vegas, Nevada, to the south. Interstate 15 also intersects Interstate 70 about 125 miles north of St. George, which in turn connects with Denver, Colorado, to the east. Access to the Kolob Canyons area of the park is directly off of Interstate 15. To get to the southern entrance of the park, visitors take Interstate 15 through St. George to Utah Route 9 and drive 42 miles to Springdale. To reach the eastern

TABLE 12: TOP THREE INDUSTRIES IN TERMS OF EARNINGS IN 1995

Primary Economic Sectors in Terms of Earnings in 1995				
	Industry and Percent of Total Earnings	Industry and Percent of Total Earnings	Industry and Percent of Total Earnings	Total Earnings (Thousands of \$)
State of Utah	Services (26.9%)	State and Local Government (11.8%)	Durable Goods Manufacturing (11.1%)	\$27,615,561
Iron County	Services (23.3%)	State and Local Government (21.9%)	Retail Trade (13.9%)	\$257,706
Kane County	Services (33.0%)	Retail Trade (19.4%)	State and Local Government (19.4%)	\$49,881
Washington County	Services (28.2%)	Retail Trade (18.0%)	Construction (16.8%)	\$702,990

Source: Bureau of Economic Analysis, Regional Economic Information System, Economics and Statistics Administration, U.S. Department of Commerce, 1995 data.

entrance of the park, visitors use Utah Routes 89 and 9 via Panguitch or Kanab.

VISITOR SERVICES

Beaver, Cedar City, Kanab, Panguitch, St. George, and Springdale in southwest Utah have a variety of restaurants, motels, souvenir shops, and other retail establishments offering goods and services to the traveling public. The abundance of lodging facilities, including campgrounds, as well as eating establishments in southwestern Utah attest to the importance of tourism in the region. Automotive services, medical services, and other visitor services are available in some communities.

Rockville and Springdale serve as the southern gateway to the most heavily used areas of Zion. Springdale, with approximately 300 permanent residents, is adjacent to the park entrance. Fourteen motels, lodges, and inns, and eleven bed and breakfast establishments are located within Rockville and Springdale. The lodging facilities range from small bed and breakfasts with two to five units, to a lodge that offers 120 units. Nearly 500 lodging units are available to the public. In addition, there is a privately owned campground (open to the public) in Springdale. A dozen restaurants were open in Springdale in 1998.

The local (Zion Canyon) economy is based on tourism, ranching, fruit production, and the arts. Springdale has a chamber of commerce (Zion Canyon Chamber of Commerce), a medical clinic, and a town office. In addition to lodging and food establishments, there are many shops and galleries offering souvenirs and a variety of crafts and original art.

Access to the east entrance of the park is through Kane County. Near this entrance, at Mt. Carmel Junction, three motels, two campgrounds, and a restaurant provide lodging and food services for visitors arriving via Utah Routes 89 and 9. Fewer visitors make use of the east entrance of the park as compared to the south entrance.

Southeast of the park, 17 miles from Mt. Carmel Junction, is Kanab — the largest town in Kane County, with a 1990 population of 3,289. Kanab is the county seat and serves as a recreational and commercial center for Kane County and the Arizona strip. A BLM visitor information center is located here. A range of commercial services, including lodging, automotive services, restaurants, and several local tourist attractions featuring Old West and Hollywood movie themes, is found in Kanab. The town has about two dozen lodging establishments and over twenty restaurants.

Cedar City is about 18 miles north of the Kolob Canyons entrance to the park. This city had a population of 13,443 in 1990. A wide variety of services are available in Cedar City — 20 lodging establishments, 7 campgrounds, and close to 40 restaurants serve the public. Cedar City also has a visitor center and automotive and medical services.

REGIONAL LANDOWNERSHIP AND USE

Zion National Park is surrounded by a mix of federal, state, and privately owned lands. The Bureau of Land Management manages national resource lands that lie along almost 57% of the park's boundary. State owned school lands are found next to slightly less than 8.5% of Zion's border. Privately owned lands surround approximately 34.5% of the park. The lands bordering the park are used for a variety of purposes, including grazing and ranching, recreation, private residences, and commercial uses.

Table 13 indicates the general land ownership patterns of the three counties in which the park is located. A large area of each of these three counties is publicly owned, with the federal government managing the largest portions of each county. The Bureau of Land Management, U.S. Forest Service, National Park

Service, and Bureau of Indian Affairs (Shivwits Indian Reservation) all manage federal lands within this three-county area. The state of Utah owns and manages numerous school section parcels throughout these counties. In addition, six state parks are located in the area. The amount of area in private ownership ranges from approximately one-third in Iron County to less than one-twentieth in Kane County.

The land within this corner of Utah is used for a variety of purposes including, but not limited to, agriculture (i.e., farming, orchards, ranching, livestock grazing), mineral exploration and production (including coal, oil, and natural gas production), outdoor recreation of all types, timber production, watershed protection, wilderness, transportation (including roads, powerlines, and pipelines), wildlife and fish habitat, and urban and commercial uses. While traditional uses such as grazing, mining, and forest products are still important to the area's economy, other uses that are tied to the land — especially outdoor recreation and tourism — are growing in importance. The relatively mild climate and varied and abundant recreational opportunities have encouraged the development of the region for commercial, residential, tourism and vacation, and retirement purposes.

TABLE 13: LANDOWNERSHIP IN SOUTHWEST UTAH

	Iron County		Kane County		Washington County	
	Square Miles	Percentage of Total Area	Square Miles	Percentage of Total Area	Square Miles	Percentage of Total Area
Private	1,777.07	35.66%	218	4.99%	412	17.0%
State	201.57	6.11%	437	9.99%	121	5.0%
Federal	1,921.99	58.23%	3,718	85.02%	1,892	78.0%
Total	3,900.63	100%	4,373	100%	2,425	100%

Source: Iron, Kane, and Washington County Governments.

ENVIRONMENTAL CONSEQUENCES



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INTRODUCTION

The National Environmental Policy Act mandates that environmental impact statements disclose the environmental impacts of a proposed federal action. In this case, the proposed federal action is the implementation of the *General Management Plan* for Zion National Park.

This part of the document analyzes the potential effects of the four management alternatives on resources, the visitor experience, and the socioeconomic environment of Zion National Park. These effects provide a basis for comparing the advantages and disadvantages of the alternatives.

The alternatives in this document provide broad management directions. Because of the general, conceptual nature of their potential consequences, the alternatives can only be analyzed in general terms. Thus, this environmental impact statement should be considered a programmatic analysis. Prior to undertaking specific developments or other actions as a result of the *General Management Plan*, park managers will determine whether or not they will need to prepare more detailed environmental documents, consistent with the provisions of the National Environmental Policy Act.

The "Environmental Consequences" part first identifies the impact topics the planning team chose to analyze and discuss in this document, the topics the team chose not to discuss, and the rationale for making these selections. The impact topics were divided into the following categories:

- natural resources
- visitor uses and experiences
- socioeconomic environment

Types of Impacts

Impacts may be direct, indirect, or cumulative. **Direct effects** are caused by an action and occur at the same time and place as the action. **Indirect effects** are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable. **Cumulative effects** are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

This part next discusses the methodology the planning team used to identify impacts and includes definitions of terms. The alternatives are then analyzed in the order they appear in the "Alternatives, Including the Preferred Alternative." Each impact topic includes a description of the positive and negative effects of the alternative, a discussion of the cumulative effects, if any, and a conclusion statement.

At the end of the discussion for each alternative, there is a brief discussion of unavoidable adverse effects, effects from short-term uses and long-term productivity, and irreversible and irretrievable commitments of resources. (Table 7, which is included at the end of "Alternatives, Including the Preferred Alternative," compares and summarizes the impacts of each alternative.)

For the analyses, the planning team assumed that the Park Service would take the mitigation measures described in the alternatives, such as avoiding threatened and endangered species habitats. The planning team also assumed that the interim group size and encounter rate limits identified in the

ENVIRONMENTAL CONSEQUENCES

Intensity and Duration of Impacts

Impact intensity is the degree to which a topic is positively or negatively affected. For this environmental impact statement, the planning team qualitatively evaluated the impact intensity for all of the impact topics in the alternatives (i.e., the natural resource, visitor experience, and socioeconomic topics), using the following terms:

- **Negligible** — The impact is at the lower levels of detection
- **Minor** — The impact is slight but detectable
- **Moderate** — The impact is readily apparent
- **Major** — The impact is severely adverse or exceptionally beneficial

Impact duration refers to how long an impact would last. For the purposes of this document, the planning team used the following terms to evaluate the natural resource, visitor experience, and socioeconomic topics in the alternatives:

- **Short-term** — The impact lasts less than one year
- **Long-term** — The impact lasts one year or more

alternatives would continue through the life of the plan. If the limits change, a new environmental analysis would be prepared as part of the wilderness management plan.

Note that aside from evaluating the cumulative impacts for certain impact topics, the planning team did not reexamine decisions and impacts the Park Service identified in the *Zion Canyon Transportation System Environmental Assessment* (NPS 1997a) and the *Development Concept Plan / Environmental Assessment, Zion Canyon Headquarters* (NPS 1994b).

IMPACT TOPICS CONSIDERED IN THIS ENVIRONMENTAL IMPACT STATEMENT

To focus the environmental impact statement, the planning team selected specific impacts for further analysis and eliminated others from evaluation. A brief rationale for the selection of the topics is given below.

Natural Resource Topics

The planning team selected ten natural resource impact topics for analysis based on

the major values or issues the team identified early in the planning process, as well as applicable laws and executive orders (e.g., Endangered Species Act of 1973, as amended; Executive Order 11988 (Floodplain Management)). The impact topics analyzed are as follows:

- air quality
- water quality
- North Fork of the Virgin River floodplain
- riparian/wetland communities
- hanging gardens
- microbiotic crusts
- Virgin spinedace
- Mexican spotted owl
- desert bighorn sheep

All of these resources have the potential to be appreciably affected under the alternatives evaluated. In addition, the team selected these topics because they are of special concern (e.g., Mexican spotted owl, Virgin spinedace), are sensitive to disturbance (e.g., hanging gardens, riparian communities, microbiotic

soils), are of high public interest (e.g., desert bighorn sheep), or are key resources that can affect visitors and the biotic community (e.g., water and air quality, the North Fork floodplain).

Visitor Use and Experience Topics

Early in the planning process, the planning team identified visitor use and experience topics as being important values or issues to the public, as well as key elements of concern to park managers, and evaluated the uses and experiences that may be appreciably affected under the alternatives. Impact topics include visitor activities and experiences inside the park, natural sounds, and visitor experiences in other recreational areas near the park.

Socioeconomic Topics

The planning team selected the socioeconomic environment as an impact topic because the park is an important part of the local economy. Analyzing the local economic impacts provides the context for evaluating the possible impacts the alternatives may have on the local area.

Conflicts with Land Use Plans

The implementing regulations of the National Environmental Policy Act (40CFR 1502.1.6 1506.2(d)) require that this topic be evaluated in environmental impact statements.

IMPACT TOPICS CONSIDERED BUT NOT ANALYZED IN DETAIL

Under NPS policies and Council on Environmental Quality regulations, environmental impact statements must address a number of impact topics. However, the planning team for the *General Management Plan / Environmental Impact Statement*, dismissed several

irrelevant topics as well as topics that would remain unaffected by the alternatives. The team dismissed other topics because the potential for impacts under all of the alternatives would be negligible. These topics are addressed below.

Natural Resource Topics

Regional Air Quality. Regional air quality and visibility issues would not be affected by actions in these alternatives. Air pollution from sources outside the park would be addressed through Clean Air Act authorities and through cooperative efforts between the National Park Service and the Western Regional Air Partnership. (However, the alternatives do have the potential to result in localized impacts on air quality. Thus, localized air quality impacts were analyzed.)

Floodplains (Other than the North Fork of the Virgin River). Backcountry trails and routes in other drainage bottoms in the park would subject visitors to flooding hazards. However, most of these drainages receive little use, compared to the North Fork, and the Park Service is not proposing any new developments other than trails or routes on these floodplains. Also, NPS floodplain guidelines anticipate the use of backcountry sites and trails. Park staff would continue to emphasize public education and awareness of flood hazards to minimize potentially hazardous conditions.

Water Quantity. The Zion National Park Water Rights Settlement Agreement of 1996 is the primary tool for maintaining and protecting stream flow, spring discharge, and groundwater. As a result of this agreement, no changes in surface or groundwater flows are anticipated that will be sufficient to be detected throughout the park.

Threatened, Endangered, or Rare Species (Other than Mexican Spotted Owl and Southwestern Willow Flycatcher). This document does not include analyses on the environmental effects that the alternatives may have on several federal and state listed threatened and endangered species and rare plant species.

Desert tortoise — A small population of federally threatened desert tortoises (*Gopherus agassizii*) occurs in one limited area that encompasses both park land and adjacent Bureau of Land Management (BLM) lands. The Upper Virgin River recovery plan unit for the tortoise does not encompass lands within the park, and there is no critical habitat within the park. It is not suspected that this population was introduced to the site.

Access in the general area of the tortoise population is by one minimally marked BLM trail. Visitor use is limited in the vicinity and occurs mostly in the cooler months when tortoises are underground in dens.

Under all the action alternatives, the tortoise site will be a pristine zone; no new developments will be constructed in this area. Thus, no cumulative effects are expected to occur on tortoises under any of the alternatives presented in this document.

Bald eagle — Bald eagles (*Haliaeetus leucocephalus*), a federally threatened species, winter in the vicinity of the park, especially in the Sevier River Valley east of the park. Although they are commonly observed near the Blue Reservoir to the north, only a few bald eagles are observed each year in the park during the winter and early spring months, and birds occasionally entering the park perch along the North Fork of the Virgin River. Thus, eagle use in the park is sporadic, uncommon, and unpredictable. Large congregations do not occur, and there are no known, regularly used, winter perch sites or known roost sites within the park. Given the

very limited and sporadic use by eagles in the park, no effect is expected on bald eagles.

Peregrine falcon — The peregrine falcon (*Falco peregrinus anatum*) was recently delisted as a federally endangered species. The population has been gradually increasing in the park since the 1970s. Much of the park is considered to be good habitat due to the prevalence of cliffs, which the birds use for nesting.

There are 15 known peregrine territories in the park and at least 2 more are suspected based on observation reports. A few of these territories include some of the most heavily used portions of the park in Zion Canyon. The peregrine falcons using these sites have habituated to the large numbers of people and noise generated from high traffic volumes in the canyon.

Park personnel currently monitor six peregrine falcon territories on an active basis during the breeding and nesting season (approximately February through July). These are the falcon territories that encompass popular cliff-climbing sites in the park. Each year on February 1, the cliff faces that have historically harbored falcon nests are closed to climbing. As the birds select their nesting areas for the year, the cliffs not selected by the birds are reopened. The nesting cliffs remain closed until the young fledge. Closures are established upon and are dependent upon continued monitoring by park personnel.

It is not expected that the birds would be disturbed by the increased use in the canyon and on other trails far below the cliffs used by these birds. Park managers would continue to close cliff faces supporting aeries during the critical breeding and nesting periods. A climbing management plan (yet to be written) will address climbing routes in relation to peregrine nesting areas.

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Peregrines are, however, known to be sensitive to disturbances such as human presence or aircraft noise above or near their nest site. Most trails and routes in the park follow drainage bottoms and not cliff edges, although two popular trails, Angels Landing and Cable Mountain, do allow access above several cliff faces the falcons have used for nesting. Peregrines have nested several times on Cable Mountain, but no nesting has been reported in recent years on Angels Landing, where peregrines have historically nested. These two potential nest sites would continue to be affected by continued or potentially increased human use in these areas.

To currently use low level aircraft in the park, pilots must obtain special permission from the superintendent. On rare occasions, park managers authorize the use of helicopters, for such activities as suppressing fires, maintaining repeaters, and conducting scientific studies. During the nesting/breeding season, air traffic is directed away from peregrine nesting areas in these circumstances. In a future aircraft management plan, the Park Service will address the issue of reducing conflicts between aircraft and peregrine falcons.

The alternatives are expected to have no effect on the overall peregrine population, given the continuing use of occupied territories in the park, the existence of extensive suitable habitat throughout the park, the implementation of use restrictions near occupied nest sites, and the Park Service's proposal that no new trails and routes would provide direct access to cliff faces above known nest sites.

Utah prairie dog — The Utah prairie dog (*Cynomys parvidens*), a federally threatened species, has not been recorded in nor is it believed to occur within the park. However, the southern tip of the prairie dog's range is close enough to Zion's northern border that the park may be within the species' dispersal range. Open grasslands that cover plateaus in the northernmost portion of the park would be

the most likely areas the prairie dog would colonize. The Park Service plans no development in these areas. Additionally, most use occurs in the canyon bottoms, not along the plateaus. Thus, no impacts are expected to occur on this species from any of the alternatives under consideration.

Ferruginous hawk — The state threatened ferruginous hawk nests at the interface of pinyon-juniper habitats and open sagebrush and grassland habitats in southwestern Utah. This habitat primarily occurs in backcountry areas. With restrictions on backcountry use as well as minimal new development along road corridors in hawk habitat, no impact on ferruginous hawks is expected.

Yellow-billed cuckoo — This state threatened species used to occur in Springdale and likely in the park. Little suitable or marginally suitable habitat of gallery forests of cottonwood and willow exist in the park and this species has not been seen or heard in those habitats. It is unlikely that this species occurs in the park and no impacts from any of the alternatives is expected.

Banded gila monster — This state endangered species likely occurs in the park. It has been documented outside the park boundary in the Huber Wash area. Zoning of the Huber and Coalpits Wash areas as primarily pristine, with the primitive zone along trail corridors, would allow only very low to low levels of recreational use. No impacts to banded gila monsters would be expected.

Kanab ambersnail — This state endangered species is a terrestrial species that is associated with soils wetted by springs and seeps at the base of sandstone cliffs. A recent survey for this species as well as the studies of other snail species and hanging gardens have never found this species. No impacts would be expected.

Rare plant species — There are no federally listed plant species within Zion National Park;

however, a number of plant species endemic to the park and/or considered rare in Utah do occur. In the late 1980s, the Park Service conducted a general parkwide survey that located numerous populations throughout the park. In 1998, detailed surveys and mapping of a few populations indicated that many of the rare plant species may be more abundant and have larger distributions than originally found. Two of the species are associated with hanging gardens. The others are scattered throughout the park, with many occurring on slick rock and mesa tops.

Visitor use near rare plant populations primarily occurs along trails or on bare rock; however, off-trail hiking or walking in slick rock areas can lead to inadvertent trampling of rare plants. Trails can be located and routes identified to avoid impacts on rare plants. Mitigation measures can also be employed, such as erosion control or placement of barriers, in specific areas where necessary to control potential indirect effects on plants from trail erosion or social trailing.

Populations most vulnerable to visitor disturbance occur in slick rock areas that are fairly accessible and inviting along the Zion-Mt. Carmel Highway. Current impacts on rare plants in this area are minimal, and impacts are expected to remain so under all the action alternatives because this area would be a primitive or pristine zone. Under all alternatives and in all zones, park staff would survey proposed development sites for rare plants and avoid populations.

Vegetation (General). Under all the alternatives, localized vegetation damage and loss would continue to occur along trails and routes and near visitor facilities and park roads. Because new facilities would be built in previously disturbed sites, additional disturbance to vegetation would be minimized. In general, impacts on vegetation would be minor due to their localized nature and the expectation that local and regional populations

would not be affected. To provide more focus to the impact analysis, the specific impact topic of riparian/wetland communities was evaluated based on the limited occurrence of riparian/wetland communities in the park and the proportionately higher visitor use these areas receive compared to surrounding arid lands.

Specialized Plant Communities. Several plant communities are unique in Zion, among them relict communities and rock crevice communities. Relict communities, which occur in areas such as isolated mesa tops inaccessible to domestic grazing, represent undisturbed plant communities. These relict communities would not be subject to impacts from any of the alternatives. The majority of the rock crevice communities are inaccessible. Impacts from continuing or increased visitor use, particularly rock climbing or scrambling, would continue to be minor, due to the limited extent of the impacts relative to the widespread distribution of this community in the park.

Wildlife (General). Continued or increased visitor use of trails, routes, and other visitor facilities in all of the alternatives would disturb various wildlife species that live or travel near these areas. Construction associated with new facilities would temporarily disturb or displace wildlife species and would result in the loss of small amounts of habitat. Habitat loss would be reduced by the construction of new facilities in previously disturbed sites. To further reduce impacts on wildlife, park managers would implement mitigation measures, such as restricting visitor activities during sensitive times, providing visitor education, and enforcing laws. Under all the alternatives, impacts on most wildlife species are generally expected to be minor and not affect the abundance or distribution of local or regional populations. To provide more focus to the impact analysis, this plan further evaluates the potential for impacts on three specific wildlife

species (Virgin spinedace, Mexican spotted owl, and desert bighorn sheep).

Wild and Scenic Rivers (Natural Resources). All actions within the action alternatives for the river segments proposed for wild, scenic, or recreational river designation would be consistent with the recommended river classifications. These designations would not be expected to substantially increase visitor use levels in the park or have substantial, if any, effects on the resources already protected in the park.

Prime and Unique Farmlands. There are no prime and unique farmlands within the park; no effect on these lands would occur.

Energy Requirements and Conservation Potential. None of the alternatives presented in this plan would result in a major change in energy consumption compared to current conditions. As noted in "Park Policies and Practices," the National Park Service would pursue sustainable practices whenever possible in all decisions regarding park operations, facilities management, and development in Zion. Whenever possible, the Park Service would use energy conservation technologies and renewable energy sources.

Natural or Depletible Resource Requirements and Conservation Potential. None of the alternatives would result in the extraction of resources from the park. As noted in "Park Policies and Practices," under all of the alternatives, park staff would apply ecological principles to ensure that the park's natural resources were maintained and not impaired.

Indian Trust Assets. No Indian trust assets were identified. Therefore, there would be no impacts.

Research Values. All of the alternatives would promote the protection and restoration of resources and ecological processes within the park and the related landscape. Establishment of research natural areas would par-

ticularly provide for areas with high value for baseline inventory and long-term ecological observation. Consequently, there would be no adverse impacts on research values.

Cultural Resource Topics

During the planning process, the planning team consulted the Utah State Historic Preservation Officer and the Advisory Council on Historic Preservation. These agencies have concurred that they will consider the effects on cultural resources once the Park Service develops specific undertakings of the approved *General Management Plan*.

The following actions would take place under all of the alternatives:

- Park staff would comply with the mandates of the National Historic Preservation Act, as amended, and other laws, regulations, executive orders, and memoranda of agreement that pertain to the protection, preservation, and management of cultural resources.
- As per section 106 of the National Historic Preservation Act, as amended, park staff would continue to consult with the Utah State Historic Preservation Officer, the Advisory Council on Historic Preservation, affiliated Indian tribes, and members of the affected public to
 - identify eligible or listed properties on the National Register of Historic Places
 - consider project-related effects on those properties
 - develop appropriate measures to avoid effects or treatments that lessen adverse effects on eligible or listed national register properties
- Where appropriate, new construction would continue to meet the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation

(NPS 1997) in terms of design, scale, and materials to ensure compatibility with existing historic architectural design and contextual setting.

- In accordance with the provisions in the Native American Graves Protection and Repatriation Act (NAGPRA), the National Park Service would continue to consult with affiliated Indian tribes if park personnel or visitors discovered burials containing human remains or funerary objects during any project-related activities. Park staff would cease all construction activities until consultation was complete.
- Park staff would apply the mitigation measures described under "Park Policies and Practices."

The above actions should minimize the potential for impacts on cultural resources. Therefore, the planning team has decided not to further analyze effects on cultural resources in this plan.

Visitor Use and Experience Topics

Rivers. The designation as wild, scenic, or recreational would have no effect on the way visitors experienced these rivers within Zion National Park. All of these rivers are currently being managed in ways that are consistent with their potential designation. As stated in the Wild and Scenic River Evaluation (appendix F), "wild and scenic designation would have little if any effect on uses within Zion National Park. The park is already administered for protecting the outstandingly remarkable resources, and building new dams is extremely unlikely. No uses would be foreclosed or curtailed that are not already occurring." Therefore, the designation of rivers as wild, scenic, or recreational would have a negligible effect on the experience of Zion visitors.

Some of the river segments studied for designation are on BLM land. The Bureau of Land Management currently manages all but three of the segments in ways that are consistent with this designation, and currently allows the use of off-highway vehicles and mountain bikes on the Willis Creek, Kolob Narrows, and Goose Creek segments. These uses would be prohibited if the segments were designated as wild rivers. However, the three areas receive almost no recreational use due to their isolation and difficult accessibility. Therefore designating these segments as wild and closing them to mountain bike and off highway vehicle use would have a negligible impact on the visitor experiences for these segments.

Night Sky. Zion's night sky is a feature that contributes to the quality of the visitor experience. Current park policy states that the National Park Service will seek to minimize the intrusion of artificial light into the night scene by limiting artificial outdoor lighting to basic safety requirements, shielding the lights when possible, and using appropriate lamp styles.

There are few actions proposed in any of the alternatives that would affect the night sky. The construction of a visitor facility on the east side of the park, either within or outside the park boundaries, would necessitate some night-time lighting. However, the effects of this lighting would be minimized by the mitigation techniques described above.

Socioeconomic Topics

Environmental Justice. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their

programs/policies on minorities and low-income populations and communities.

For the purpose of fulfilling Executive Order 12898, in the context of the National Environmental Policy Act, the planning team assessed the alternatives presented in this plan during the planning process. The team determined that none of these alternatives would result in significant direct or indirect negative or adverse effects on any minority or low-income population or community. The following information contributed to this conclusion:

- The developments and actions of the alternatives would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect negative or adverse effects on any minority or low-income population or community.
- The impacts on the natural and physical environment that occur due to any of the alternatives would not significantly and adversely affect any minority or low-income population or community.
- The alternatives would not result in any identified effects that would be specific to any minority or low-income community.
- The Zion planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.
- Park staff members have consulted and worked with the affected American Indian tribes and will continue to do so in cooperative efforts to improve communications and resolve any problems that occur. Also, the planning team did not identify any negative or adverse effects that disproportionately and adversely affect the tribes.
- Impacts on the socioeconomic environment due to the alternatives would be minor or positive and would occur mostly

within the local and regional geographic area near the park. These impacts would not occur at one time but would be spread over a number of years, thus mitigating their effects. Also, the planning team does not expect impacts on the socioeconomic environment to significantly alter the physical and social structure of the nearby communities.

METHODOLOGY

The planning team based this impact analysis and the conclusions in this part largely on the review of existing literature and park studies, information provided by experts within the National Park Service and other agencies, and park staff insights and professional judgments. Further explanations and caveats of how the team analyzed the impacts for two natural resource impact topics follow below.

It is important to remember that all of the alternatives assume that park managers will apply mitigation measures to minimize or avoid impacts. Increased visitor use generates the need for additional monitoring and the mitigation of impacts. If mitigation measures cited in this part and all the alternatives are not applied, the potential for resource impacts would increase and the magnitude of those impacts would rise.

Facilities and Resources on the North Fork of the Virgin River Floodplain

The focus of this impact assessment is on natural river processes and hazards associated with flooding. The analysis mentions the impacts on other ecological floodplain values, but assesses them further under riparian communities/ wetlands and native fish species sections. Potential hazards for specific existing facilities (i.e., Zion Lodge and associated buildings and the Birch Creek water tank and corral) and any new facilities proposed under the alternatives in relation to the 100-year,

500-year, and probable maximum floodplain were evaluated.

Mexican Spotted Owl

The Mexican Spotted Owl Recovery Plan (USFWS 1995) identified recreation as the primary potential threat to spotted owls in the Colorado Plateau Recovery Unit. The following impact assessment is based on the management recommendations contained in the spotted owl recovery plan that relate to recreational use or development. Based on recovery plan guidelines, park staff established 18 protected activity centers for all known owl territories in the park. The recovery plan recommendations specific for recreation are as follows:

- No construction of new facilities or expansion of existing facilities should take place within protected activity centers during the breeding season, March 1 through August 31. Any construction within protected activity centers during the nonbreeding season should be considered on a case-specific basis.

- Managers should, on a case-specific basis, assess the presence and intensity of allowable recreational activities within protected activity centers. They should consider spatial and temporal restrictions for new activities and seasonal closures of specifically designated recreational activities, where appropriate.

One other general recommendation that would also apply to actions in the alternatives is as follows:

- Road or trail building in protected activity centers should generally be avoided, but these activities may be allowed on a case-specific basis, if pressing management reasons can be demonstrated.

The alternatives were evaluated based on the presence of protected activity centers in areas of proposed or existing facilities, trails, and routes, and the recovery plan recommendations.

IMPACTS OF THE NO-ACTION ALTERNATIVE

NATURAL RESOURCES

Air Quality

Analysis. In general, expected increases in visitation under this alternative, coupled with the retention of existing traffic patterns and vehicle use, would result in moderate increases in localized emissions. This potentially could reduce near-range visibility. The Kolob Canyons Road, Kolob-Terrace Road, and Zion-Mt. Carmel Highway would likewise experience increased traffic, resulting in minor, short-term vehicle emissions and reduced near-range visibility.

Cumulative Effects. No other actions besides those noted above are known that would have a cumulative negative impact on the park's air quality. Indeed, the implementation of the Zion Canyon transportation system, combined with actions being taken to minimize pollution sources in the park (e.g., encouraging campers to use gas stoves for cooking), would moderately reduce local emissions and improve near-range visibility.

Conclusion. The no-action alternative would result in minor to moderate, localized, adverse impacts on air quality.

Water Quality

Analysis. Increased use of facilities, parking areas, picnic areas, campsites, and trails would result in minor increases in suspended sediment, turbidity, and fuels in nearby streams. Increased turbidity would occur in localized areas, where visitors were eroding soils near streams, and along stream reaches, where visitor activities (wading, hiking, and fishing) directly disturbed stream bottom sediments. Water pollution would also continue to occur

from trash or human wastes deposited in or near streams. With increased use along some streams within the park, particularly along the intensively used reaches of the North Fork of the Virgin River, some moderate localized decreases in water quality would likely occur. However, continued visitor management efforts (e.g., interpretive displays and programs, ranger patrols) would help minimize effects on water quality from increased use.

Cumulative Effects. Water pollution from sources outside of the park would be addressed through cooperative efforts between park staff, adjacent landowners, and the Utah Department of Natural Resources, as outlined under "Park Policies and Practices." One effort would be National Park Service participation in the Virgin River Watershed Management Plan currently under development. Therefore, cumulative impacts are expected to be negligible.

Conclusion. Increased use under the no-action alternative would likely cause moderate, adverse effects on water quality.

North Fork of the Virgin River Floodplain

Analysis. The Zion Lodge and associated buildings would remain within the probable maximum floodplain under this alternative (and all of the other alternatives) due to a lack of other suitable sites on the narrow canyon bottom. Estimates of flood stage indicate that the existing road grade would protect this development and contain both the 100- and 500-year floods. An exception to this estimate is in the upstream reach adjacent to the main lodge building, where the 500-year flood would overtop the road and inundate a portion of the lawn area in front of the lodge. However, the flood depth would not reach the

lodge foundation, and overbank velocities would not likely exceed 2 feet per second. Even with failure of the road grade, neither of these design floods would reach the elevation of the lodge, since the foundation was estimated to be a minimum of three feet above the 100-year flood and one foot above the 500-year flood.

No floodplain mapping or flood stage estimates have been made for the support facilities (housing, water tank, and corrals) on the Birch Creek point. Based on the topography and river channel characteristics in this area, these facilities are likely elevated outside of the 100- and 500-year floodplains, but would be within the probable maximum floodplain.

Visitors would continue to recreate in flood hazard areas along the North Fork of the Virgin River and its tributaries because these areas would be unavoidable within the confines of the canyon walls. On average, dangerous floods would occur every year in slot canyons, and a few times a century in the broader canyon. The existing evacuation plan and warning system should provide adequate time for evacuation and would remain in effect. Park staff would also continue to emphasize public education and awareness of flood hazards and place signs at existing picnic facilities that warn of flash flood hazards and indicate evacuation areas. These measures would minimize potentially hazardous conditions. Based on expected increased use level, in the canyon and up through the lower Narrows, there would be a minor to moderate, long-term increase in the number of people exposed to flood hazards.

Floodplain functions in Zion Canyon would continue to be impaired for 4.5 miles (of the 9.5 miles from the bottom of the Narrows to the southern park boundary) due to past channelization. The existing river structures would maintain the current channelized floodplain conditions, which increase the

river's tendency to incise and further isolate the adjacent terraces from flood flows and alluvial ground water.

In these armored reaches, the river would continue to have little opportunity to develop the meandering, riffle-pool morphology typical of rivers in low-gradient alluvial valleys. Lack of an active floodplain would continue to negatively affect important hydrologic and ecological functions in the canyon, preventing conditions necessary for riparian vegetation growth, and to a lesser extent, slowing and storing flood flows for later release and increased groundwater levels. Associated river and floodplain resources, including riparian/ wetland vegetation, Virgin spinedace, flannel mouth sucker, and potential southwestern willow flycatcher habitat, would continue to be degraded. Because of the importance of these resources and their very limited occurrence in the park and region, the perpetuation of channelization would be a moderate to major long-term, adverse impact in the affected reaches.

Cumulative Effects. Many of the existing developments, and virtually all of the approved transportation system developments, would be within the North Fork probable maximum floodplain. These facilities do not affect the natural floodplain values, except for minor effects on groundwater recharge from impervious surfaces. Diversion structures for the Flannigan and Crawford/Gifford ditches and the concrete apron at the Temple of Sinawava would remain. These structures probably impede, but do not block, native fish movements. The concrete apron that protects a water pipeline crossing at Birch Creek also would remain, continuing to impact river processes and detract from the natural appearance of the river. It may also impede but not block the movement of aquatic species. Overall, all of these structures would continue to have a moderate to major, negative cumulative impact on the river's morphology and associated values.

Past channelization throughout the North Fork floodplain, along with other past agricultural and grazing impacts, have all contributed to a more narrow, incised, less meandering channel, with minimal overflow capacities. Use and development activities have also altered much of the North Fork's floodplain and associated natural values south of the park. Based on the extent of the modifications to the river and the associated floodplain values, the no-action alternative would have a moderate, long-term, cumulative impact; the alternative would perpetuate highly modified conditions in the affected reaches within the park, which would contribute to the overall altered character of the North Fork.

Conclusion. There would be no increase in the level of development in the floodplains under the no-action alternative. Zion Lodge and the facilities at Birch Creek would remain within the probable maximum floodplain of the North Fork. There would likely be a minor to moderate increase in the number of people within the floodplain, but flood warnings and public awareness efforts would reduce flood risks to people. If use continued to increase in the canyon, a minor to moderate, long-term increase in the number of people exposed to flood hazards would be likely.

Past channelization would continue to impair floodplain functions in Zion Canyon for 4.5 miles. The no-action alternative would have a moderate to major, long-term, adverse effect on the North Fork's natural river processes and other natural floodplain values within the park.

Riparian/Wetland Communities

Analysis. Existing levees and other control structures have changed and would continue to change the shape of the North Fork's natural river channel, erosion processes, and flow patterns. As a result, there would continue to be decreased inundation, decreased channel

movement, and decreased sediment deposition along approximately 2 miles of the river floodplain. Confining and straightening the channel have also caused it to incise three to five feet, further isolating the floodplain and making it more arid.

Under the no-action alternative, these processes would continue to directly contribute to reduced riparian area or reduced potential for natural riparian development along the river corridor. Riparian vegetation such as cottonwoods and willows depend upon newly deposited floodplain sediments to propagate. As the senescence of the existing older over-story species proceeded, the lack of propagation would result in the long-term loss of riparian vegetation in channelized reaches of the river near the lodge and campgrounds. Plants better adapted to more stable and arid conditions would become established. The appearance of a riparian system might be partly maintained through plantings, irrigation, and other artificial means, but this arrangement would lack many of the attributes of a natural riparian community.

Recreational use along the North Fork is currently quite high and would likely increase. Trampling and localized loss of riparian vegetation, primarily near the developed areas and head of the canyon would continue. Methods to help mitigate damage might include exclusions from particular areas, barriers, or designated river access/crossing points.

Overall, this loss of riparian habitat along the North Fork from channelization and recreational use would be a moderate to major, long-term, adverse impact, with the greatest impact occurring along the channelized and heavily used sections of the river.

Riparian communities elsewhere in the park are relatively intact. Impacts from continued or increased use in canyons in the less accessible backcountry would be minor. Increased use of popular areas that already had

high use levels (e.g., Left Fork, La Verkin/ Kolob Arch, Middle Fork of Taylor Creek) would result in greater impacts on riparian understory vegetation in localized areas along the creeks. The mitigation of impacts might include on-site reclamation, visitor education, improvements to trails, or the regulation of use levels through the permitting system.

Cumulative Effects. Riparian communities along the North Fork are also negatively affected by the invasion of exotic species (e.g., tamarisk, cheatgrass, rigput brome) and browsing by a high population of mule deer that use the canyon. These conditions also contribute to the overall modified environment, which cumulatively result in minor to moderate, long-term, adverse impacts.

Riparian areas within the park represent only a small portion of those found regionally. Large scale loss and modification of riparian habitat in the southwestern United States have occurred from urban and agricultural development, water diversion and impoundment, channelization, livestock grazing, off-road vehicle and other recreational uses, and hydrological changes resulting from these and other land uses. The park represents a significant portion of the upper Virgin River watershed. Continued loss of riparian habitat in the park would have a negative cumulative impact on riparian areas within the watershed, which would contribute to the major loss of riparian areas that has already occurred.

Conclusion. As a result of the isolation of the North Fork from its floodplain in portions of Zion Canyon, the riparian system along 4.5 miles of the river would continue to decline and become more arid. Impacts on riparian communities within the park would be moderate to major, with the greatest impact occurring along the channelized and heavily used sections of the North Fork. This loss would be relatively small from a regional perspective, but it would contribute to the continuing major loss of riparian areas within the Virgin River

watershed. In other riparian areas within the park, impacts such as trampling would be minor with mitigation.

Hanging Gardens

Analysis. Impacts on hanging gardens occur primarily when people run their hands across the area, inadvertently removing vegetation and possibly rubbing Zion snails (a rare, endemic species) off the surface. However, the Zion snail may retreat into rock crevices during certain times of the year, leaving them less susceptible to direct impacts.

Hanging gardens within Zion Canyon, including the Narrows, would continue to be most susceptible to potential impacts from visitor use. To prevent human contact with the gardens and subsequent damage or loss of vegetation from increased visitor use in the canyon, park managers would continue to use mitigation measures, such as trails and barriers. In particular, these measures would be implemented in one hanging garden along the Riverside Walk that has lost vegetation. Thus, mitigation would limit damage or loss of vegetation, resulting in minor, short-term, adverse impacts on gardens.

Cumulative Effects. Past human impacts on several hanging gardens have been substantial, but have been mitigated with the use of trails and barriers that prevent contact with the gardens. Consequently, although several hanging gardens have been readily accessible, loss of vegetation has been minor. With continued application of mitigation measures, adverse cumulative impacts on hanging gardens would be minor and short term.

Conclusion. Under the no-action alternative, there would continue to be the potential for additional impacts on hanging gardens that are not protected by barriers. However, mitigation measures would limit damage or loss of vegetation, resulting in minor, short-term, adverse impacts on hanging gardens.

Microbiotic Crusts

Analysis. The Park Service would propose no new major park developments under the no-action alternative, but would review all new projects to ensure that impacts on microbiotic crusts are avoided or minimized. However, hikers would continue to be allowed off-trail in all areas of the park and would place few limits on numbers. This could result in widespread, long-term, adverse impacts (e.g. compaction, erosion) to microbiotic crusts, with a moderate to major impact on localized areas.

Cumulative Effects. In general, many of the soils in the park have recovered from the effects of past grazing, farming, and logging. However, permanent loss of microbiotic crusts has occurred in areas of development such as roads, trails, and buildings. Although widespread impacts could occur with increased visitor use, most of the approximately 75,000 acres of park lands that likely support microbiotic crusts would not be subject to disturbance. Thus, this alternative would have a minor cumulative impact on microbiotic crusts.

Conclusion. Moderate to major, localized, long-term impacts on microbiotic crusts would likely continue in areas with extensive development and use. But most of the approximately 75,000 acres of lands likely supporting microbiotic soils within the park would not be subject to disturbance. Thus, from a parkwide perspective, impacts on microbiotic crusts are expected to be minor.

Virgin Spinedace

Analysis. As noted previously, the North Fork would continue to have little opportunity to develop the meandering, riffle-pool morphology typical of rivers in low-gradient alluvial valleys. Consequently, riverine ecology would continue to be radically altered, and few deep pools would be available to spinedace or other

fish. Lack of an active floodplain would negatively affect the propagation of riparian vegetation, which in turn would directly affect the spinedace. That is, the riparian vegetation moderates water temperatures, stabilizes stream banks (which reduces stream siltation), provides hiding cover, and provides biomass input for the aquatic environment that support invertebrates and habitat for insects that are food sources for fish. Thus, the existing river stabilization measures would continue to have a long-term, minor to moderate, adverse impact on spinedace habitat due to diminished pool/riffle habitat and riparian vegetation in portions of the North Fork.

A recent study indicated that, within Zion Canyon, river recreational use is affecting the distribution, abundance, and community structure of native fish. In areas with high levels of recreational use, there was lower community diversity and abundance of species, particularly for younger fish (Sappington 1998). Although this study did not find a difference in food availability in the form of aquatic insects and algae, a separate study indicated that areas of high recreational use show decreased invertebrate biomass (Shakarjian and Stanford 1998). Abundance of larval fish in shallow waters along the river margin was lower in high recreational use areas, suggesting that recreational use may reduce the supply of new recruits for adult populations in these areas.

Even moderate flash floods appear to reconfigure stream channel habitats altered by recreationists and redistribute fish throughout the river. However, an important factor in fish community recovery after disturbance is the presence of nearby colonizing populations. With continued high levels of recreational use, primarily in existing popular locations between the campgrounds and southern park boundary and in the Narrows, it is likely that minor additional impacts on the population would occur. The ability of the spinedace to feed in high recreational use areas also would

be affected due to turbidity. Should high levels of recreational use occupy an increasing greater proportion of the river, a major, long-term impact to the population may occur.

Negligible impacts on other spinedace populations in the park also are expected under the no-action alternative. Parunuweap Canyon and Shunes Creek would continue to be closed to public use. Depending on the structures used to divert water from Shunes Creek under an existing private water right, spinedace populations there could be temporarily negatively impacted. The Park Service is assessing the impacts of this action in a separate environmental assessment. Spinedace extend for only a very short distance into the park along North Creek, where large increases in public use are not likely because there are no existing trails or routes in that reach.

Cumulative Effects. The implementation of the conservation strategy outlined in the interagency conservation agreement for this species would reduce significant threats to Virgin spinedace and protect/enhance specific reaches of occupied and unoccupied historic habitat throughout the watershed. Continued protection of occupied habitat along the North Fork within the park would support the objectives of the agreement. Because the native fish community of the Virgin River drainage (including spinedace) occurs in historic levels of abundance only in the park and for a short distance downstream (Gregory and Deacon 1994, Valdez et al. 1990), minimizing further disturbance in this area is important (Williams and Deacon 1998). It is not likely that current high use levels will cause long-term effects on the spinedace and other native fish populations. However, if recreational use occurs in an increasingly greater proportion of the river and decreases the supply of nearby colonizing fish, there would be a major, long-term, adverse cumulative effect.

The Zion National Park Water Rights Settlement Agreement of 1996 would protect against changes in flow and thermal regimes caused by upstream water developments that could affect native fish species. Land use upstream of the park may affect the water chemistry/sediment load in the North and East Forks, although upstream perturbations apparently have not had serious adverse effects on the fish community in the park. Substantial changes in land use or the alteration of the landscape (e.g., widespread logging or mineral extraction) are not anticipated. Park staff would work with other agencies and private landowners to minimize effects on park resources. A long-term water quality monitoring program would also allow for the early detection of potential impacts.

Conclusion. Along the North Fork, the abundance of larval fish and the ability of fish to feed would continue to be negatively affected in high recreational use areas of the river. Pools and riffles, and riparian vegetation would remain at diminished levels due to the presence of river stabilization structures. Recreational use and river channelization would continue to negatively affect the spinedace population and habitat to a minor to moderate degree. Should high levels of recreational use occupy an increasing greater proportion of the river, a major, long-term impact to the population may occur.

Mexican Spotted Owls

Analysis. Under this alternative, the Park Service would not construct any new facilities (i.e., buildings, roads, parking areas, campgrounds, or picnic areas) within any currently known spotted owl territory located in Zion National Park. Owls may be disturbed by the presence of people or human activities, but little is known about recreational use impacts on Mexican spotted owls. Spotted owls are difficult to study or monitor, particularly so in Zion National Park, because of the rugged

topography. Park managers have begun to monitor owl nesting activity and productivity in territories where impacts might be expected.

Very popular trails traverse through three owl territories associated with side canyons off of the main Zion Canyon, below the Temple of Sinawava. The Park Service expects the use of these trails to increase over existing levels. The results of recreational impact monitoring may warrant the Park Service to close portions of the trails where the owls are typically found or place signs requiring that people stay on the trail and out of side canyons frequented by owls during their breeding/nesting period (i.e., March 1 – August 31). Park personnel would enforce these closures. These measures would mitigate potential effects from increased visitation in these areas.

Under the no-action alternative, there would be an increased potential to adversely affect some of the known owl territories in the park backcountry. The planning team expects recreational use in the backcountry to increase. Even low levels of use may affect owl behavior. Two specific owl territories are most vulnerable to increased visitor disturbance. These territories include canyons along the Zion-Mt. Carmel Highway that are fairly accessible and inviting, although no designated trails or routes access these canyons. The Park Service would continue to monitor owl nesting activity and productivity to assess potential impacts. If necessary, visitor use also would be restricted to mitigate impacts on spotted owls based on increased backcountry use. This alternative is not likely to adversely affect the productivity of known territories.

Cumulative Effects. As part of the Zion Canyon transportation system planning process, the potential effects of implementing a canyon shuttle system and constructing shuttle stops, with the associated increased use of trails through side canyons that support owl territories, were evaluated. The implementa-

tion of the trail closures noted above were identified as part of that process to mitigate effects of increased use. No cumulative effects are expected.

Conclusion. This alternative is not likely to adversely affect the productivity of known territories. Park personnel would enforce trail closures and signing for side canyons off of the main Zion Canyon. Should increases in use occur in some backcountry owl territories, the Park Service would develop use restrictions.

Southwestern Willow Flycatcher

Analysis. Willow flycatcher habitat in Parunuweap Canyon would not likely be adversely affected because there would be no development or recreational use through the canyon. There would also not likely be adverse effects on willow flycatcher habitat in Birch Creek because there would be no new development or recreational use along Birch Creek.

The isolation of the North Fork from its floodplain in portions of Zion Canyon would continue to contribute to reduced riparian area or reduced potential for natural riparian development along the river corridor. Recreational use along the North Fork and other popular backcountry areas (e.g., Left Fork, La Verkin/ Kolob Arch, Middle Fork of Taylor Creek) would likely increase. Trampling and localized loss of riparian vegetation would continue, although measures to mitigate damage would be implemented. This loss of riparian habitat would reduce potential flycatcher habitat, although there are no records that document this species along the North Fork or other backcountry areas.

Continued Park Service surveys for flycatchers would also aid management in avoiding or minimizing impacts to flycatcher habitat.

Cumulative Effects. The southwestern willow flycatcher has been adversely affected by the conversion or destruction of native riparian habitats. The park represents a significant portion of the upper Virgin River watershed. Continued loss of riparian habitat in the park, primarily along the North Fork, would have a negative cumulative impact on riparian areas within the watershed, which would contribute to the reduction of potential flycatcher habitat.

Conclusion. This alternative might affect, but would not likely adversely affect, the southwestern willow flycatcher. Although potential impacts might occur, with implementation of mitigation measures the impacts would not likely adversely affect the species. The loss of riparian areas within the park would be relatively small from a regional perspective but would contribute to the major loss of riparian areas and potential flycatcher habitat within the Virgin River watershed.

Desert Bighorn Sheep

Analysis. The Park Service would continue to prohibit public recreational use of Panunweap Canyon and Shunes Creek, which encompasses nearly one third of the sheep's range in the park. This would protect the sheep's range and lambing areas year-round, especially in the fall when sheep use the East Fork as a water source.

The increased use and proliferation of informal pullouts/social trails along the Zion-Mt. Carmel Highway could inadvertently disrupt sheep crossings. However, sheep would likely habituate to this human activity, and therefore only minor impacts would be expected.

Sheep would also be vulnerable to increased visitor use and exploration of side canyons off of this highway, particularly if use increased substantially south of the road in Gifford Canyon and/or Crawford Wash (both of which

are frequented by sheep). Increased use could occur here because these areas are fairly accessible and no use limits would be in effect. Depending on the levels and locations of visitor use, the sheep could potentially be displaced from a portion of their range, resulting in minor to moderate impacts. Should sheep be displaced from key portions of their range, this would be a major impact.

Cumulative Effects. There would be no cumulative impacts on this species under this alternative. The sheep may potentially be affected if air tours occur over their range in the park. The Park Service would prepare an air tour management plan to address this use and potential impacts on sensitive wildlife such as sheep.

Conclusion. Impacts on desert bighorn sheep would be minor to moderate due to the potential for unlimited visitor use in portions of the range the sheep frequently use for foraging. Displacement of sheep from key portions of their range would be a major impact.

VISITOR EXPERIENCES AND USES

Natural Sounds

Analysis. With increased use levels, the Kolob Canyons Road, Kolob-Terrace Road, and the Zion-Mt. Carmel Highway would likely experience increased vehicular traffic, resulting in moderate increases in noise. However, the natural soundscape in these areas is already impacted due to existing traffic. In the backcountry, higher use levels also would tend to result in more noise (talking, shouting) masking natural sounds. Even with mitigation measures, the opportunity to experience the natural soundscape would decrease in popular areas and trails.

Cumulative Effects. The implementation of the Zion Canyon transportation system would moderately reduce mechanical noises from

vehicular traffic. This action, in combination with the reduction of some other noise sources in the canyon, would result in a moderate, long-term, positive effect. On the other hand, if aircraft overflights increased over the park, the noise of the aircraft in combination with the noise from increased vehicle use on the three roads and use of the backcountry would have a moderate, long-term, negative effect.

Conclusion. Overall, there would be a minor to moderate increase in noise impacts in the park from increased use and the retention of existing visitor use patterns and vehicle use. Mitigation would reduce noise from some sources, particularly in Zion Canyon, but there likely would be a minor to moderate, long-term, increase in noise, which would mask natural sounds.

Range of Visitor Experiences and Activities

Analysis. Under the no-action alternative, current conditions and management directions would remain the same and visitor numbers would most likely increase over time. In general, crowding and noise associated with increased visitation would increase, and opportunities for visitors to experience solitude, natural soundscapes, and the feeling of being immersed in a remote wildland would diminish in areas that were not closely managed. In several areas of the park, managers would take action to protect resources and key visitor experiences, which would help mitigate the decline in opportunities to experience solitude and natural soundscapes. But since there would be no proactive limits on use, the quality and range of visitor experiences available would diminish, particularly during the peak season and at popular locations. This would have a moderate to major, adverse impact on visitors seeking those types of experiences. An unknown number of people seeking certain experiences may be displaced to other less crowded areas.

In those areas with visitor use limits, the visitors who obtained permits would have a positive experience enjoying the resources and solitude. Visitors who could not obtain permits at their preferred time would be negatively affected by the restrictions.

Those visitors wishing to mountain bike, participate in commercially guided climbing or backpacking, or ride their horses in certain areas would need to go to other nearby recreation areas for these activities. The no-action alternative thus would have a moderate, negative impact on visitors who valued those activities. Visitors who valued being able to experience Zion's trails without sharing them with bicyclists, horseback riders, and guided groups, would have a moderate, positive impact from this alternative.

Kolob Canyons Road, Kolob-Terrace Road, Lava Point, and the East Entrance and Zion-Mt. Carmel Highway Areas — Visitation would likely continue to increase along the Kolob Canyons Road, the Kolob-Terrace Road, Lava Point, the Zion-Mt. Carmel Highway, and the east entrance. If visitors choose not to take the Zion Canyon shuttle and go elsewhere in the park, use levels in the above areas may increase at a faster rate.

As visitation increased in these areas, visitors would potentially experience more traffic congestion, crowding, noise associated with increased visitation (e.g., voices, vehicle noise), and fewer opportunities for solitude, particularly during the peak visitor season. The degradation of park resources due to increased visitor use may occur (e.g., increased litter and erosion, more social trails), which would reduce visitors' opportunities to view park resources in a natural state.

South Entrance and the Main Zion Canyon — Visitation levels would likely continue to increase in Zion Canyon. Opportunities for visitors to experience solitude consequently would decrease, particularly at popular areas

such as the Temple of Sinawava and Weeping Rock. However, the shuttle system would manage the amount of visitor use and distribution within Zion Canyon depending upon the need to protect resources and provide quality visitor experiences. The extent of positive and negative impacts on the visitor experience would depend on how the Park Service managed the transportation system (for example, the frequency of buses); these impacts can not be addressed at this time.

Recommended Wilderness — The Park Service would continue to manage the areas recommended for wilderness as wilderness. As backcountry use continued to increase, backcountry users would have more encounters with other visitors. Larger groups also may go into the recommended wilderness, particularly on trails in popular areas where visitor numbers are not being managed. As a result, visitors would find it more difficult to experience solitude and quiet, particularly during the peak season. Some visitors may experience a minor to moderate, negative impact if group sizes or encounter rates exceeded their wilderness experience expectations. Visitors also could begin to experience park resources in a less pristine state. For example, visitors might see eroded trails, damaged vegetation, more social trails, or increased litter. While actions would continue to be taken to limit visitor impacts on resources and maintain wilderness values, these actions would be reactive and occur on a case-by-case basis. Overall, with increased use, there would likely be a gradual decrease in opportunities to experience solitude, natural soundscapes, and pristine park resources in popular areas (e.g., La Verkin Creek, the West Rim trail), which would have a moderate, negative impact on those visitors who expected or desired those experiences. An unknown number of people may be displaced to other less crowded areas.

Visitors would continue to be able to use the recommended wilderness in a relatively unre-

stricted fashion, although they would still need permits for overnight use and face the same restrictions on day use in the Left Fork of North Creek and the Narrows and the use of horses.

Visitors would continue to be able to choose where to hike, climb, or camp in most of the recommended wilderness. For some visitors, unrestricted access is a defining characteristic of a wilderness experience. This alternative would continue to have a moderate, positive impact on those visitors who valued personal choice, unrestricted access, and personal convenience.

Research Natural Areas — The Park Service would take no actions that would affect visitor use in the existing research natural areas. The difficulty in accessing most of these areas would likely prevent the use of these areas from increasing appreciably.

The Park Service would continue to manage Parunuweap Canyon as a proposed research natural area and keep it closed to recreational use. Thus, the no-action alternative would continue to have a negative impact on those visitors who sought to enter this area and experience its resources. For the majority of the park's visitors, the closure would have no effect on their experience because they are not familiar with Parunuweap.

Scenic Views — Most of the park's viewshed would continue to appear natural to most visitors. Visual intrusions would likely continue to increase as development outside the park increased, particularly in the Springdale area. While park staff would continue to work with neighboring landowners to reduce the impacts of development, in several areas, the opportunities for visitors to look out from the park and see a natural landscape with no modern intrusions on the visual scene would likely gradually decrease over time. This would have a minor to moderate, adverse impact on the experiences of park visitors.

impact on visitors' experiences at other nearby attractions.

Cumulative Effects. Relatively few people would likely be displaced to other state and federal recreational lands and facilities as a result of the actions (or nonactions) of this alternative. More people may be displaced with the operation of the shuttle system — people may not have the time to take the shuttle or they may not want to leave their personal vehicles. Some of these people may choose not to come to Zion or decide to cut their trips short, but they still would be visiting these other recreational areas as part of their "Grand Circle" vacations. Thus, the no-action alternative would have a negligible cumulative effect on visitor levels and experiences in other recreational areas.

Conclusion. If visitation continued to increase and the Park Service took no other management actions, some people might be displaced from Zion to other nearby recreational areas. This would likely have a negligible to minor, negative effect on the experiences provided at these areas.

SOCIOECONOMIC ENVIRONMENT

Analysis. Since the no-action alternative would mean that current management directions and conditions would remain essentially the same, little change in the short- or long-term socioeconomic conditions related to the park's impact on the local region would likely occur. The park would continue to be a part of the local socioeconomic environment, and the National Park Service's expenditures for goods, services, and staff would continue to benefit the area. The park would still attract visitors, and their spending patterns would continue to contribute to the regional economy.

With continued increase in use levels, some business activity in the local area may increase, resulting in some minor to moderate,

Cumulative Effects. Under the no-action alternative, increased use levels would likely occur in frontcountry areas, including the Kolob Canyons Road, Kolob-Terrace Road, and the Zion-Mt. Carmel Highway. The operation of the Zion Canyon shuttles also may result in more visitors going to these areas rather than the main canyon. As overall park visitation increases, visitors may experience more crowding and noise and observe more resource impacts at the facilities and trails in these areas. The changes would occur slowly, but would eventually have a moderate, negative cumulative impact on those visitors wishing to experience solitude, quiet, or a "rustic" park experience.

Conclusion. Under the no-action alternative, the quality and range of visitor experiences would gradually decrease in popular areas if visitation increased and the Park Service took no management actions. Although most visitors would likely continue to have what they consider to be a "good" park experience, opportunities for experiencing solitude and quiet would continue to diminish in areas that park personnel were not closely managing. Crowding and traffic congestion would likely increase in frontcountry areas other than the main Zion Canyon. Some people might be displaced to otherwise crowded areas. On the other hand, visitors would continue to have unrestricted access to many park resources. Overall, if use levels continued to increase, the no-action alternative would likely have a minor to moderate, negative impact on visitors' experiences in Zion.

Visitor Experiences at Other Recreational Areas Near the Park

Analysis. As visitation increased in the park and opportunities to experience quiet and solitude decreased, visitors desiring quiet and solitude might choose to go to other public land areas. This would have a minor negative

positive, benefits for some firms and/or individuals. These benefits may be long term as well as short term, depending upon whether or not the potential increases in business activity are sustainable.

Increased levels of visitors to the park and their concurrent demands for goods and services has caused the private sector outside the park to respond with increased levels of development and economic activity. In particular, the gateway community of Springdale would likely continue to experience further development and more frequent traffic congestion, with associated increased demands upon local infrastructure and public services (e.g., roads, water and sewer, police and fire protection, emergency medical services). Other gateway communities would experience similar impacts.

Cumulative Effects. Zion National Park has been a protected area since 1909. As a result of increased visitation to the park, business and residential development have increased. This growth trend has had a moderate to major, positive impact on the local/regional economy. For example, in Springdale, a theater/shopping complex and new motels were built in the 1990s, which have provided long-term employment opportunities for local residents. The planning team expected the positive effects of the growth trend on the local and regional economy to continue, but does not expect this alternative to change the ongoing trend. The implementation of the Zion Canyon shuttle system would result in additional NPS expenditures and would have a positive, long-term benefit on the local and regional economy. Overall, the no-action alternative would likely have a long-term, negligible to minor, positive cumulative effect on the local and regional economy.

Conclusion. The park would continue to contribute to the local economy in the short and long term. Some individuals and/or firms may be positively affected, depending upon

individual circumstances. However, the no-action alternative would result in a negligible, positive change to the park's overall contribution to the local/regional socioeconomic environment.

CONFLICTS WITH LAND USE PLANS

Analysis. Zion National Park is within the boundaries of Iron, Washington, and Kane Counties. All three counties have a general plan as required by enabling legislation passed by the Utah state legislature and reflected in section 17-27-301 of the Utah code. Portions of the Iron County general plan relating to national park areas focus on Cedar Breaks National Monument, with Zion being mentioned primarily for its impacts related to tourism and recreational opportunities.

The portions of the *Washington County* and *Kane County General Plans* relating to federal government coordination emphasizes the mandates of the Bureau of Land Management (BLM) and do not recognize the separate mandates applicable to the U.S. Forest Service or the National Park Service. For example, the *Washington County Plan* provides that this plan is to be used by federal land managing agencies in developing land use plans required by section 202 of the Federal Land Policy and Management Act and 43 CFR, subpart 1601. Similarly, the *Kane County General Plan* recognizes "that federal law mandates multiple use of federally managed land..." and cites the Federal Land Policy and Management Act, 43 U.S.C. as the guiding legislation. In both cases, these provisions apply only to BLM and do not apply to either the U.S. Forest Service or the National Park Service, each having its own organic acts and policies for land use planning (see also "Clarifications of Commonly Raised Public Concerns," concern 14).

The *Washington County General Plan's* recommendation that park land within

Washington County not be managed as wilderness conflicts with NPS policy. According to NPS Management Policies, land that has been recommended to Congress as recommended wilderness must be managed in accordance with the provisions of the Wilderness Act.

All three plans emphasize the need for coordination and communication with federal land managing agencies. Many of the concerns that have surfaced have been because of inadequate communication and coordination.

Cumulative Effects. There would be no cumulative effects.

Conclusion. The 1978 wilderness recommendation identified in the *General Management Plan* would be in conflict with the *Washington County General Plan*.

UNAVOIDABLE ADVERSE EFFECTS OF THE NO-ACTION ALTERNATIVE

No major adverse natural resource impacts are expected.

If the National Park Service took no additional visitor management actions, and use levels

continued to increase, the quality of the visitor experience would likely diminish in some popular frontcountry areas and in day use areas in the recommended wilderness. Increased crowding and congestion and fewer opportunities for solitude and quiet in areas like the side canyons off the Zion-Mt. Carmel Highway would be unavoidable adverse effects of this alternative.

RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Maintaining channelized sections of the North Fork of the Virgin River would result in the continued long-term loss of productivity of the biological resources associated with the river and its floodplain.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES FOR THE NO-ACTION ALTERNATIVE

There would be no irreversible or irretrievable commitments of resources under the no-action alternative.

IMPACTS OF THE PREFERRED ALTERNATIVE

NATURAL RESOURCES

Air Quality

Analysis. Similar to the no-action alternative, increased visitation and associated increased vehicle use would create moderate increases in localized emissions and the reduction in near-range visibility. However, park personnel may need to restrict the number of vehicles along the Kolob Canyons Road in the future, to fulfill zone prescriptions. This action would reduce vehicle emissions and improve near-range visibility to a minor degree, as compared to the no-action alternative.

There would be some short-term, localized, minor impacts on air quality resulting from particulates and machinery fumes generated during the construction, removal, and improvement of facilities. Park personnel would apply water or other palliatives to control dust, and machinery would have to meet emission standards.

Cumulative Effects. No other actions are known that would have a cumulative negative impact on the park's air quality. The implementation of the voluntary Zion-Mt. Carmel Highway shuttle, combined with the Zion Canyon transportation system and actions taken to minimize pollution sources in the park (e.g., encouraging campers to use gas stoves for cooking), would moderately reduce local emissions and improve near-range visibility.

Conclusion. Parkwide, little change would be likely in the park's air quality based on the preferred alternative. There would be a moderate increase in vehicle emissions and decrease in near-range visibility along roads. However, if vehicle use along the Kolob Canyons Road were restricted, there would be a minor localized reduction in vehicle

emissions and improvement in near-range visibility. Construction activities also would result in a minor, short-term decrease in local air quality.

Water Quality

Analysis. The construction or improvement of parking areas/ trailheads, picnic areas, campsites, trails, and the expansion of the Kolob Canyons Visitor Center could result in minor increases in suspended sediment, turbidity, and petroleum residues in nearby streams. Construction impacts would be temporary and mitigated by placing silt fencing, retaining and replacing topsoil, revegetating areas, selectively scheduling project work, or applying other site-specific measures that would reduce runoff from construction sites. Increased turbidity would occur in localized areas where visitors eroded soils along stream banks and along reaches where visitor activities (e.g., wading, hiking, fishing) directly disturbed bottom sediments. Water pollution would also continue to occur from trash or human wastes deposited in or near streams. With increased use along some streams within the park, particularly along the intensively used reaches of the North Fork of the Virgin River, some localized decreases in water quality would likely occur. However, increased use would likely lead to only minor adverse effects on water quality, due to increased visitor management efforts in this alternative, such as designating water access points, regulating use levels, and timing use, as well as applying other mitigation measures (e.g., increased visitor education, improved disposal of backcountry human wastes, placement of sanitation facilities, and the possible revegetation of portions of the banks and floodplain of the North Fork).

River restoration measures along the North Fork of the Virgin River that involved the

physical manipulation of the river banks or bed would result in moderate, short-term increases in turbidity. Increased sediment discharge could continue to occur intermittently for a few years, depending on the modifications that were made to the channel. However, the vast majority of this discharge would occur during flood events when the river was naturally very turbid.

Cumulative Effects. The Park Service would address water pollution from sources outside of the park through cooperative efforts between the park staff, adjacent landowners, and the Utah Department of Natural Resources as outlined under "Park Policies and Practices." One such effort would be NPS participation in the Virgin River Watershed Management Plan currently under development. Therefore, cumulative impacts would most likely be negligible.

Conclusion. Minor impacts on water quality, such as increased turbidity, sedimentation, and bacterial contamination, would likely occur in localized areas with increased use. Minor short-term increases in turbidity and sedimentation would occur during construction, but these impacts could be mitigated through accepted construction practices. Moderate short-term increases in turbidity would occur during river manipulation activities. Occasional short-term increases in turbidity from river restoration measures may occur for several years.

The North Fork of the Virgin River Floodplain

Analysis. Hazards related to flooding would be similar to those of the no-action alternative, except that new picnic areas could be added in the canyon, most likely outside of the 100- and 500-year floodplains, but not outside of the probable maximum floodplains. The existing evacuation plan and warning system should provide adequate time for evacuation.

Park staff would also continue to emphasize public education and awareness of flood hazards and would add signs to the new and existing picnic facilities to warn of flash flood hazards and evacuation areas. These measures would minimize potentially hazardous conditions. Assuming that visitor use continued to increase in the canyon, there would be a minor, long-term increase in the number of people exposed to flood hazards.

Maintaining the Zion Lodge and Birch Creek developments would have minimal effect on natural floodplain values.

River restoration actions could include removing the levee and riverbank protection structures along portions of the North Fork or allowing the structures to deteriorate. These actions would eventually subject the existing infrastructure in the fluvially active zone to greater risks. The road would become the new limit to lateral migration of the river. From time to time, the river would approach and threaten the road and riverside trails, which would periodically require the armoring of the road grade and trails with natural materials to preserve riparian function and aesthetic values. Park personnel would need to relocate some water and sewer pipelines. At some point, the river also would threaten the footbridges for the Grotto and Emerald Pools trails, and park managers would need to evaluate alternative means of access to these trails.

The restoration of the natural river morphology along portions of the river would allow flood waters to overflow onto the adjacent floodplain. Overbank flows serve important hydrologic and ecological functions, such as providing conditions necessary for riparian vegetation growth, slowing and storing flood flows for later release, and raising groundwater levels. The river would have the opportunity to develop the meandering, riffle-pool morphology typical of rivers in low-gradient alluvial valleys. Associated river and flood-

plain resources including riparian/wetland vegetation, floodplain forests, Virgin spine-dace and other native fishes, and potentially southwestern willow flycatcher habitat would also benefit. Because of the importance of these resources and their very limited occurrence in the park, river restoration would be a major, long-term, beneficial effect.

Cumulative Effects. Many of the existing facilities and virtually all of the approved transportation system developments would be within the probable maximum floodplain. These facilities do not affect the natural floodplain values, except for minor effects on groundwater recharge from impervious surfaces.

Past channelization throughout the North Fork floodplain, along with other past agricultural and grazing impacts, have all contributed to a more narrow, incised, less meandering channel, with minimal overflow capacities. Use and development activities south of the park also have altered much of the North Fork's floodplain and associated natural values. Because of past modifications to the river, the measures to restore floodplain processes and associated natural values to portions of the river would create a moderate, long-term, beneficial cumulative effect to the North Fork.

Conclusion. There would be a minor increase in the level of development (addition of picnic sites) in the probable maximum floodplain and a minor increase in the number of people within the floodplains. The flood warning system and public awareness efforts would reduce flood risks to people. If use continued to increase in the canyon, there would be a minor, long-term increase in the number of people exposed to flood hazards.

The preferred alternative would have a moderate to major, long-term, beneficial effect on natural river processes and other natural

floodplain values within the park and along the lower North Fork.

The planning team has prepared a statement of findings for the preferred alternative, which is included in appendix H. This statement is in accordance with National Park Service guidelines for compliance with Executive Order 11988 (Floodplain Management). The NPS guidelines call for preserving floodplain values and minimizing potentially hazardous conditions associated with flooding.

Riparian/Wetland Communities

Analysis. The restoration of dynamic floodplain processes along portions of the North Fork in Zion Canyon would allow overbank flows that deposit sediments and provide disturbance necessary for the reproduction of cottonwoods and other riparian vegetation. These flows would support the establishment of vegetation that could replace the current aging overstory. Over the long-term, multi-aged and more structurally diverse tree stands would be present, which would be a moderate, long-term, beneficial effect for plant and animal riparian communities along the North Fork.

Recreational use along the North Fork is currently quite high and would likely increase. Trampling and localized loss of riparian vegetation would occur, primarily near the developed areas and head of the canyon and the Narrows. With increased visitor management efforts developed as part of the river management plan (such as increasing visitor education, designating water access points, regulating use levels, and timing use) and the possible revegetation of portions of the banks and floodplain of the North Fork, only minor effects on riparian vegetation would likely occur from increased use.

Riparian communities elsewhere in the park are relatively intact. Impacts on riparian understory vegetation in localized areas along

the creeks from continued or increased use in canyons in the backcountry would be negligible to minor. Limiting use through the permitting system and taking other management actions (e.g., developing standards to further protect resources) to maintain zone conditions would minimize the potential for greater, widespread impacts. Other mitigation would include on-site reclamation, visitor education, and improvements to trails.

Cumulative Effects. The management plan for the North Fork would address the specific strategies for protecting and restoring the river and its associated floodplain. These strategies include actions to address the invasion of exotic species and browsing by a large population of mule deer (which could inhibit regeneration of riparian vegetation).

In the southwestern United States, large-scale loss and modification of riparian habitats have occurred due to urban and agricultural development, water diversion and impoundment, channelization, livestock grazing, off-road vehicle and other recreational uses, and hydrological changes resulting from these and other land uses. The park represents a significant portion of the upper Virgin River watershed. The protection and improvement of riparian habitat in the park would have a positive, long-term, moderate cumulative impact on riparian areas within the watershed.

Conclusion. Overall impacts on riparian communities within the park from recreational use would be negligible to minor. The restoration of riparian habitat along the North Fork would be a moderate, long-term, beneficial impact. Incrementally increasing riparian acreage in the park also would be a moderate beneficial effect on riparian areas within the watershed.

Hanging Gardens

Analysis. As in the no-action alternative, some hanging gardens within Zion Canyon,

such as along the Riverside Walk, would continue to be susceptible to potential impacts from visitors. Impacts on hanging gardens occur primarily when people run their hands across the area, inadvertently removing vegetation. Visitors also may rub Zion snails off the surface of the hanging gardens during certain times of the year. With mitigation (e.g., barriers, placement of trails, visitor education), damage or loss of vegetation would be limited, resulting in minor, short-term, adverse impacts on the gardens.

In the preferred alternative, hanging gardens in five locations would be in research natural area zones. This designation would afford additional protection to the gardens in that very few people would have access to them.

Cumulative Effects. Past human impacts on several hanging gardens have been substantial, but have been mitigated with the use of trails and barriers that prevent contact with the gardens. Consequently, although several hanging gardens have been readily accessible, loss of vegetation has been minor. With continued use of mitigation measures, cumulative adverse impacts on hanging gardens would be minor and short term.

Conclusion. The preferred alternative would have a long-term, positive effect by zoning five locations that contain hanging gardens as research natural areas. There would continue to be the potential for visitors to adversely affect other hanging gardens, but with mitigation measures, damage or loss of vegetation would be limited to minor, short-term, adverse impacts.

Microbiotic Crusts

Analysis. Continued or increased use and the construction of picnic areas and trails in microbiotic crusts would result in the long-term loss of soils or disturbance from erosion and soil compaction. Development would remove microbiotic crusts where they

occurred, and once compacted and eroded, microbiotic crusts would be damaged and difficult to reestablish. In general, trails provide sufficient direction, and people tend to remain on them, as long as the trails adequately support the number of people using them at one time (i.e., by people wanting to walk side by side, pass slower hikers, or pass oncoming hikers) and direct people to popular viewing areas. Even with adequate trails, a small percentage of people would walk off of them resulting in damage to soils.

Soil disturbances and extensive loss of microbiotic crusts from development and people walking off-trail would be greatest in the areas that are zoned frontcountry high development, front country low development, transition, and administrative. These zones allow higher levels of use and more concentrated development than pristine, primitive, or research natural area zones. To minimize impacts, the Park Service would locate new developments in previously disturbed areas or away from microbiotic crusts where possible. Monitoring and mitigation measures, such as erosion controls, placement of barriers, signing, or rehabilitation efforts, would help to minimize disturbance to crusts from trail erosion or social trailing in specific areas. However, even with mitigation measures, moderate to major, localized disturbance to soils would still occur in areas with developments and high use levels — primarily along the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, Kolob Canyons Road, and lower Zion Canyon.

Zones that allow for little development (primitive) or no development (pristine and research natural areas) would be relatively large in the preferred alternative. Therefore, park managers would be able to locate trails and campsites in areas that would be less likely to impact microbiotic crusts, although people hiking off trail in these zones would still cause soil impacts. Because visitor numbers would be relatively low in these

zones, the potential number of off-trail hikers or number of hikers in areas without trails would be reduced, thus causing minor soil impacts.

Cumulative Effects. In general, many of the soils in the park have recovered from the effects of past grazing, farming, and logging. Permanent loss of microbiotic crusts has occurred in areas of development, such as roads, trails, and buildings. However, most of the approximately 75,000 acres of park lands that likely support microbiotic crusts would not be subject to disturbance. Because of the limited and localized extent of new impacts, this alternative would have a minor, adverse cumulative impact.

Conclusion. Localized, moderate to major, long-term impacts on microbiotic crusts would be likely in areas of extensive development and use. Additional areas would be impacted from new development in some frontcountry areas, primarily along the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, Kolob Canyons Road, and lower Zion Canyon. But most park lands likely supporting microbiotic soils would not be subject to disturbance. From a parkwide perspective, impacts on microbiotic crusts would be minor, based on the limited and localized extent of the impacts in relation to the widespread occurrence of these crusts in the park as a whole.

Virgin Spinedace

Analysis. Restoring portions of the North Fork below the Temple of Sinawava would allow the river to develop a meandering, riffle-pool morphology. These conditions would be typical of natural river conditions with which Virgin spinedace and other native fishes have evolved. More and deeper pools would be available to fishes. Shoreline habitat improvement could create new larval nursery areas. Overbank flows would contribute to condi-

tions necessary for riparian vegetation growth, in turn providing nutrients, cover, and water temperature regulation, which benefit the aquatic environment for fishes. There would be a minor to moderate, long-term improvement to habitat along portions of the North Fork.

River restoration measures that involve physical manipulation or disturbance to the riverbanks or bed would result in short-term increases in turbidity and sedimentation. Spinedace do survive periods of increased turbidity that may last several days to weeks. However, being sight feeders, they would likely be negatively affected by extended periods of high turbidity. The sedimentation of spawning beds could also be a problem. Time limitations on instream disturbance activity and avoidance of spawning periods would keep restoration impacts at negligible levels. Erosion of exposed banks during restoration would likely occur during flood events when sediment loads and turbidity levels were naturally high. The revegetation of banks would mitigate any long-term erosion.

A recent study indicated that river recreational use was disturbing fish communities within Zion Canyon (Sappington 1998). The study showed that there was lower community diversity and abundance of species, particularly for younger fish, within areas with high levels of recreational use. A separate study showed that areas of high recreational use decreased invertebrate biomass (Stanford and Shakarjian 1998). The ability of the spinedace to feed would continue to be affected by turbidity in high recreational use areas within the transition zone.

Even moderate flash floods appear to reconfigure stream channel habitats altered by recreationists and redistribute fish throughout the river. However, an important factor in community recovery after disturbance is the presence of nearby colonizing populations. An increase in the extent of recreational distur-

bance would potentially have major long-term effects on the population. Increased visitor management efforts developed as part of the river management plan (such as increasing visitor education, designating water access points, regulating use levels and timing use, and restricting high use areas to present locations) would minimize the potential for new impacts and potentially enhance the population within disturbed areas. For example, restricting recreational use during spring spawning season could enhance reproductive success. Also, reducing disturbance to shallow water nursery areas could enhance survival of larval fish. Consequently, increased visitor management would result in minor to moderate, long-term benefits to the North Fork spinedace population, depending on the extent and type of management measures implemented.

Negligible to minor impacts on spinedace populations are likely to occur elsewhere in the park. Along North Creek, potential indirect effects from trampling riparian vegetation or increasing turbidity during creek crossings would be negligible because of the low levels of use allowed in the pristine zone. No recreational use impacts would be likely in Parunuweap Canyon and Shunes Creek area due to their designation as research natural areas, although negligible to minor impacts from research and educational use would occur. Depending on the structures that divert water from Shunes Creek under an existing private water right, spinedace populations there could be temporarily negatively impacted. The Park Service is assessing impacts of this action in a separate environmental assessment.

Cumulative Effects. The implementation of the Virgin spinedace interagency conservation agreement would reduce significant threats to the species and protect/enhance specific reaches of occupied and unoccupied historic habitat throughout the watershed. The improvement of occupied habitat along the North Fork within the park would support the

objectives of the agreement. Because the native fish community of the Virgin River drainage (including spinedace) occurs in historic levels of abundance only in the park and a short distance downstream (Gregory and Deacon 1994, Valdez et al. 1990), it is important to minimize further disturbance in this area (Williams and Deacon 1998). Consequently, minimizing impacts through greater management of recreational use, as well as improving habitats through river restoration (as part of the river management plan), would provide increased protection to the North Fork population. This would be a major, long-term, beneficial effect.

The Zion National Park Water Rights Settlement Agreement of 1996 protects native fish species against changes in flow and thermal regimes caused by upstream water developments. Land use upstream of the park also may affect the water chemistry/sediment load in the North and East Forks. However, upstream perturbations apparently have not had serious adverse effects on the fish community in the park, and substantial changes in land uses or alteration of the landscape (e.g., widespread logging or mineral extraction) are not imminent. Park staff would work with other agencies and private landowners to minimize effects on park resources. A long-term water quality monitoring program also would allow for the early detection of potential impacts.

Conclusion. Although turbidity would continue to affect spinedace feeding in high recreational use areas along the North Fork, increased visitor management would minimize the potential for new impacts. River restoration measures could result in some negligible, short-term increases in turbidity, but in the long term, the river restoration measures would potentially enhance the spinedace population within disturbed areas. Therefore, the preferred alternative would have a minor to moderate, long-term benefit to the North Fork population. Impacts on spinedace populations elsewhere in the park would be

negligible to minor due to low or restricted use levels. There would be a major, long-term cumulative benefit due to further protection and potential enhancement of the park's spinedace population.

Mexican Spotted Owls

Analysis. As noted under the no-action alternative, owls may be disturbed by the presence of people or human activities. Little is known about recreational use impacts on spotted owls. Additionally, spotted owls are difficult to study or monitor, particularly so in Zion National Park, because of the rugged topography. Park managers have begun monitoring owl nesting activity and productivity in territories where impacts would more likely occur.

Under the preferred alternative, no new visitor facilities, with the possible exception of picnic sites and restrooms along the Zion-Mt. Carmel Highway, would be built in owl territories. Park managers have not yet determined specific locations for these developments but would locate picnic areas in previously disturbed sites along the road. Some of these existing pullouts are within two owl territories. To avoid impacts on these owls, park personnel would evaluate specific locations on a case-by-case basis prior to construction, in consultation with the U.S. Fish and Wildlife Service. Facilities would be located to discourage visitation into the canyons owls are known to use and would not be built during the breeding / nesting season (March 1 – August 31). Designating the canyons near the road that were used by owls as primitive zones and the rest of the area north of the road as pristine or primitive zones and taking appropriate management actions to maintain zone conditions would keep visitor numbers at very low to low levels.

Very popular trails pass through three owl territories associated with side canyons off the

main Zion Canyon, below the Temple of Sinawava. Increased use of these trails over existing levels is likely. If the results of monitoring recreational impacts warrants, portions of these trails where owls typically were found would be closed or signs would be added to keep people on the trail and out of side canyons frequented by owls during the spotted owl breeding/nesting period, March 1 – August 31. Park personnel would enforce closures. These measures would mitigate potential effects from increased visitation in these areas.

All of the other known spotted owl territories are in areas zoned as research natural areas, pristine areas, or primitive areas. These zones allow only limited educational or research use, or very low to low levels of recreational use. Interim group size in these zones would be 12 or fewer; hiking would typically occur during the day and take people in and out of an owl's presence relatively quickly.

Low levels of use may affect the behavior of some owls, but most spotted owls appear to be relatively undisturbed by small groups (12 or fewer people) passing nearby (USFWS 1995). A more serious threat of disturbance probably arises where there is steady hiking traffic. Limitations on use levels and groups encountered per day in the pristine zone (0) and primitive zone (12 or fewer) would indirectly serve to limit frequency of use and avoid steady hiking traffic. No new designated camping sites would be located in owl territories, although dispersed camping in pristine and primitive zones would continue to be allowed. Assuming that a variety of locations would be used for dispersed camping, there would be a low probability of repeated camping in locations near a nest or roost site.

If future surveys indicated that visitors were camping near identified nest or roost sites, camping would be restricted in these locations. Monitoring of owl nesting activity and productivity would continue to assess

potential impacts. If necessary, park staff would restrict visitor use to mitigate visitor impacts on spotted owls.

Cumulative Effects. The Zion Canyon shuttle system would be the only action that potentially could result in a cumulative impact. The Zion Canyon transportation system planning process evaluated the implementation of a canyon shuttle system and the construction of shuttle stops, with the associated increased use of trails through side canyons supporting owl territories. That process identified trail closures, noted above, as a way to mitigate the effects of increased use. No cumulative effects are likely.

Conclusion. With close consultation with the U.S. Fish and Wildlife Service and the application of mitigation measures, the preferred alternative would not likely adversely affect the productivity of known spotted owl territories.

Southwestern Willow Flycatcher

Analysis. Willow flycatcher habitat in Parunuweap Canyon would not likely be adversely affected because although there would be limited research related use, there would be no development or recreational use through the canyon. There would also not likely be adverse effects on willow flycatcher habitat in Birch Creek because there would be no new development or recreational use along Birch Creek.

Impacts to riparian areas from restoration of portions of the North Fork of the Virgin River would be short-term. The restoration would improve riparian habitat and potentially flycatcher habitat. However, no records exist that document the occurrence of this species there. The river management planning process would address the specific strategies and methods for restoring the river and managing visitor use. That plan would more closely evaluate impacts of the North Fork restoration

effort, including potential benefits to flycatchers.

Impacts from increased recreational use on riparian areas along the North Fork and elsewhere in the park would be negligible to minor with the implementation of increased visitor management efforts, mitigation measures such as on-site reclamation or trail improvements, and continued Park Service flycatcher surveys that would help management avoid or minimize impacts to flycatcher habitat.

Cumulative Effects. The southwestern willow flycatcher has been adversely affected by the conversion or destruction of native riparian habitats. The park represents a significant portion of the upper Virgin River watershed. The protection and improvement of riparian habitat in the park would have a positive, long-term, moderate cumulative impact on riparian areas within the watershed, which could benefit flycatchers.

Conclusion. The preferred alternative might affect, but would not likely adversely affect, the southwestern willow flycatcher. Although potential impacts might occur, with implementation of mitigation measures and visitor management actions, the impacts would not likely adversely affect the species. Restoration of riparian habitat along the North Fork might result in long-term beneficial effects.

Desert Bighorn Sheep

Analysis. Zoning Parunuweap Canyon and upper Shunes Creek as research natural areas would preclude recreational use and thus provide continued protection to sheep range and lambing areas. Negligible to minor impacts from research activities could occur. Similarly, zoning canyons and slopes south of the Zion-Mt. Carmel Highway as research natural areas and pristine areas, including important foraging areas in Gifford Canyon, would provide further protection to sheep

range. These actions would reduce visitor use from already relatively low levels, which would be a minor, long-term, beneficial effect.

Cumulative Effects. There would be no cumulative impacts on this species. They may potentially be affected, should air tours occur over sheep range in the park. The Park Service would prepare an air tour management plan to address this use and potential impacts on sensitive wildlife such as sheep.

Conclusion. Negligible to minor impacts on lambing areas from research activities could occur. Visitor disturbance to foraging areas would be negligible to minor because the pristine and research natural area zones would allow only very low levels of use. There would be a minor benefit to sheep from limiting and reducing use in Gifford Canyon, an important sheep use area.

VISITOR EXPERIENCES AND USES

Natural Sounds

Analysis. Noise impacts under the preferred alternative would be similar to the impacts in the no-action alternative with the following exception: restrictions on the number of vehicles along the Kolob Canyons Road might take place in the future to fulfill zone prescriptions. The voluntary shuttle system on the Zion-Mt. Carmel Highway also would reduce vehicular traffic. These actions would reduce noise impacts to a minor degree compared to the actions of the no-action alternative, depending on the amount of reduction in vehicular traffic achieved.

Cumulative Effects. The operation of the Zion Canyon transportation system would substantially reduce mechanical noises from vehicular traffic in Zion Canyon. This reduction in noise in combination with the reduction of some other noise sources would result in an overall moderate, long-term, positive effect in Zion Canyon. If aircraft flights increased over

the park, the noise of the aircraft in combination with increased use levels in front-country areas could result in negative cumulative impacts on the natural soundscape, especially in undeveloped areas of the park where solitude and natural soundscape are zoned for the most protection.

Conclusion. There would be little change in the soundscape compared to the no-action alternative. If use levels continued to increase, there would be a moderate increase in noise impacts, which would mask natural sounds in the Zion-Mt. Carmel Highway and the Kolob Canyons and Kolob-Terrace frontcountry areas. If vehicle use decreased on the Kolob Canyons Road, there would be a minor reduction in noise levels. The operation of the shuttles on the east side of the park also could result in a minor reduction in noise levels.

Range of Visitor Experiences and Activities

Analysis. Under this alternative, seven different management zones would be applied to the park, which would help maintain the range of visitor experiences now offered at Zion. Applying zones to the park should have a positive effect on the visitor experience by managing each area to achieve the desired experience. Consequently, even if use levels continued to increase, visitors who sought solitude and natural soundscapes should be able to find remote wildlands to enjoy, while other visitors who sought a more social and developed experience should be able to find opportunities in the frontcountry.

With most of the park zoned pristine, visitors would have opportunities for a high-quality wilderness experience. Most visitors who ventured into these areas would be seeking this type of experience and would likely have a positive experience: they would see few or no people, have excellent opportunities for solitude and natural soundscapes, and see a natural landscape.

Most visitor use would continue to be focused in the park's frontcountry. The preferred alternative does not restrict people from using these areas (although the future carrying capacity studies may propose limits on use of some areas, and a future river management plan would examine the need for visitor use management on the North Fork). The development of a few visitor facilities, such as restrooms and picnic sites, would have a positive, minor effect on some visitors, improving their experiences in the frontcountry.

Access into the park also affects the range of visitor experiences. Acquiring access easements would ensure that visitors could continue to use several popular trails and routes that passed through private land. If these access routes were closed to the general public, visitors would not be able to visit some of these areas and would have to travel longer distances to access other areas. This circumstance would decrease the likelihood that visitors would use those routes and would decrease visitors' appreciation and enjoyment of park resources. Thus, the acquisition of access easements would have a major, positive impact on visitors using those routes.

Kolob Canyons Road — Under the preferred alternative, visitors would experience slightly more opportunities for hiking, interpretation, and picnicking in the Kolob Canyons area. For example, park personnel could install restrooms, or expand the visitor center. These changes would increase visitor comfort and provide better resource education and greater possibilities for visitors to understand the park's significance. These changes also would help visitors locate and use facilities more easily and potentially encourage more and longer visitation of the Kolob Canyons area. For those visitors who valued a more structured experience with basic facilities and services, these changes would have a minor, positive impact on their experience. For those visitors who preferred more rustic and

primitive facilities, these changes would have a minor, negative impact on their experience of the area.

Reducing parking spaces at the Middle and South Forks of Taylor Creek and the Lee Pass trailheads would have a moderate, positive impact on those visitors who were able to find parking spaces, ensuring that they would find opportunities for a high-quality wilderness experience along those trails. But for visitors who were not able to find a parking space, this action would have a moderate, negative impact. An unknown number of visitors would be displaced to other areas or would change their plans and come back to these trails at different times. If use levels continued to increase, congestion would likely increase at these parking areas, particularly at peak times.

If visitation to the Kolob Canyons area increased or if visitors stayed longer, crowding and noise levels associated with visitation could increase (e.g., voices, car noises). The degradation of park resources also may occur, such as increased litter and erosion and the formation of more social trails. These changes would have a minor, negative impact on those visitors who value natural soundscapes, solitude, and viewing park resources in a natural state.

If visitation increased substantially, park managers could limit the number of vehicles allowed on the road (and concomitantly on the trails). This action could inconvenience visitors by limiting when they could access the road in their vehicles. On the other hand, visitors would be assured of a more rural experience, and crowding and noise would be moderated.

Kolob-Terrace Road and Lava Point — Visitors would experience a slightly more structured frontcountry area than now. Under this alternative, there would be more opportunities for picnicking, and existing trailheads could be improved. These changes would have

a minor, positive impact. For those visitors who valued a more primitive and rustic experience, these changes would have a minor, negative impact.

If visitation to the Kolob-Terrace Road and Lava Point area increased or if visitors stayed longer, noise levels associated with visitation, such as voices and car noises, could increase, and there would be less opportunities to experience solitude. Some degradation of park resources also may occur. This would have a minor negative impact for those visitors who valued natural soundscapes and solitude, and viewing park resources in a natural state.

The construction of a focused visitor facility on BLM lands along the Kolob-Terrace Road would have a minor to moderate positive effect on the visitor experience. Visitors would have opportunities they do not currently have to see exhibits, talk with park staff, and learn about the park and its resources. The focused visitor facility could increase resource education and protection and increase visitor awareness of park significance. The facility also would be far more convenient for visitors who needed permits — visitors could get permits here rather than drive out of their way to the visitor center in the main Zion Canyon. The office also would enable park personnel to react faster to emergencies in this part of the park.

South Entrance and the Main Zion Canyon — The implementation of the actions in this alternative and the shuttle system would create a more formalized visitor experience in Zion Canyon. For example, park managers could improve most of the Zion Canyon trails (zoned transition) and develop more interpretive opportunities. In turn, visitors would be able to find and use trails more easily and would have more opportunities to learn about park resources and park significance. Thus, the preferred alternative would have a moderate, positive impact on those visitors who

valued a slightly more formalized park experience and comfortable access to park resources.

The possible addition of more picnic areas in the canyon would provide more opportunities for picnicking in Zion Canyon. Because picnic facilities already exist in the canyon, this action would have a minor, positive impact on those visitors who wished to picnic in Zion Canyon.

The restoration of portions of the North Fork of the Virgin River would provide visitors a chance to experience these portions of the river in a more natural state. However, during the restoration work, visitors might not be able to do their activity of choice (e.g., hike, wade or swim) in the location and time of their choice. The extent and intensity of these effects would depend on the river restoration methods. These potential impacts will be analyzed at a later time as part of the river management plan.

East Entrance and the Zion-Mt. Carmel Highway — If a space is located outside the park to provide information to visitors, this would improve orientation and facilitate trip planning for visitors arriving at Zion National Park from the east. These visitors would be less likely to miss park destinations and attractions because of a lack of information. Visitors also may be able to get backcountry permits and would gain an understanding of the Zion Canyon shuttle system. Visitors also would have additional opportunities to learn about Zion's significant resources and primary interpretive themes before driving through the park to the south entrance and transportation center. Better education about the park's resources would lead to increased visitor understanding and enjoyment of the park and enhanced protection of the resources. This would have a moderate, positive impact on the experiences of visitors arriving through the east entrance.

Because the area around the east entrance and the Zion-Mt. Carmel Highway itself would be zoned frontcountry high and low development, visitors potentially would have more opportunities for and improved access to interpretation, picnicking, and learning about park resources in this area of the park. Increased contact with park resources and additional interpretive opportunities could increase visitor understanding of, appreciation for, and enjoyment of those resources. Unlike Zion Canyon, these opportunities would be accessible with a private vehicle. This would have a moderate, positive impact on the experience of park visitors, particularly those interested in accessing facilities without having to use shuttles.

Under this alternative a few picnic sites and restrooms could be added along the Zion-Mt. Carmel Highway. This would provide additional opportunities for visitors to use this area, which would likely have a minor, positive effect on some visitors' experiences in this part of the park.

Although the operation of the Zion Canyon shuttle could increase traffic on the park's east side, the initiation of a voluntary shuttle service along the Zion-Mt. Carmel Highway would provide visitors with another option for reaching attractions on the east side. The shuttles might reduce traffic on the Zion-Mt. Carmel Highway, compared to the no-action alternative, providing a less crowded, quieter, and safer experience for visitors driving or biking on the road. If traffic were reduced, it would allow visitors hiking in the vicinity of the highway to experience quieter conditions. The shuttle also would provide a convenient service for visitors who wanted to do one-way hikes to or from the eastern part of the park, or for groups of visitors who wanted to split up. Overall, the operation of this voluntary shuttle would have a minor, positive impact on visitors utilizing the Zion-Mt. Carmel Highway.

Recommended Wilderness — Although use levels would be expected to continue to increase in the recommended wilderness, the new interim encounter rate limits would likely have a negligible effect on most backcountry visitors. In most areas people would continue to find opportunities for solitude and natural soundscapes, and the new interim limits would not affect them — use levels would not be likely to increase to a point where the interim encounter rate limits would be exceeded. In a few popular areas, such as the Middle Fork of Taylor Creek and La Verkin Creek, the encounter limits would help ensure that use levels do not increase substantially. For those visitors who would be seeking a wilderness experience at Zion and were willing and able to be flexible, the encounter limits likely would have a minor to moderate, positive impact, compared to the no-action alternative.

The preferred alternative would have several negative impacts on visitors who wanted to enter the recommended wilderness area. Any restrictions that affect personal choice and access would be seen by some as detracting from their park visit. Under this alternative, park personnel may limit or reduce use on 12 trails and routes, including several of the park's popular trails (e.g., Middle Fork of Taylor Creek, La Verkin Creek). The new interim encounter rate limits could mean that some visitors might have to change their destination, or the timing of their trip. For those visitors, this alternative would have a minor to moderate, negative impact. Some visitors may experience a minor to moderate, negative impact if group sizes or encounter rates exceed their wilderness experience expectations. There also would be some potential inconveniences prior to entering the recommended wilderness, such as having to obtain permits, or make reservations.

Saddle stock users who ride in the upper Coalpits Wash and Dalton Wash/Crater Hill areas would not be able to use these areas because of their designation as pristine zones.

Most saddle stock users would not be affected by the alternative because they don't use these areas. A few saddle stock users would be displaced, but there are other destinations in the park they could visit. Thus, this action would be expected to have a minor negative impact on saddle stock users.

As noted in the alternative, the wilderness management plan and carrying capacity studies would determine if guided activities could be permitted in Zion's backcountry. If permitted, areas that could be open for guided activities would be very limited due to zoning. The impacts of guided activities would be assessed as part of the wilderness management plan.

Research Natural Areas — Approximately 8,893 acres of Zion's recommended wilderness would be research natural area zones and therefore open only to authorized research and NPS-guided educational trips. These areas currently receive little or no recreational use. As a result, managing these areas as research natural areas (and therefore prohibiting public recreational use) would have a negligible impact on most visitors' experiences. Some visitors who would like to visit research natural areas but were turned away may feel this is a detraction from their park experience. But these people could find other suitable areas in the park to visit.

Scenic Views — As in the no-action alternative, most of the park's viewshed would continue to appear natural to most visitors. Acquiring conservation easements outside the park, and thereby limiting the amount and kinds of development that could occur, would ensure the preservation of the scenic resources of the areas involved. Visitors could continue to experience views of these areas without scenic impairments. This would have a moderate, positive impact on visitors who experience those viewsheds.

Several new facilities potentially developed within Zion National Park could affect scenic views, including an expansion of the Kolob Canyons visitor center, new picnic sites and restrooms, and improved parking areas. It was assumed that the impacts of these developments on views would be minimized through appropriate facility design and landscaping. Still, these developments would have a minor, negative impact on the experiences of visitors who valued a less developed visual scene.

Cumulative Effects. The increased management of backcountry use and the potential restriction of private vehicles on the Kolob Canyons Road, taken in conjunction with the operation of the Zion Canyon shuttles, would create a more structured visitor experience at Zion National Park — visitors would have fewer personal choices to go when and where they want. However, the shuttles would also ensure that visitors could stop at major attractions in the Zion Canyon without having to compete for parking spaces. The extent of the impacts on visitors would depend on the decisions of several subsequent plans including the wilderness management plan, the river management plan, and the transportation plan.

The new developments proposed in this alternative, together with the operation of the Zion Canyon shuttles, are likely to result in increased use levels over time in other frontcountry areas, including the Kolob Canyons Road, Kolob-Terrace Road, and the Zion-Mt. Carmel Highway. As overall park visitation increased, visitors may experience more crowding and noise and observe more resource impacts at the facilities and trails in these frontcountry areas. The changes would likely occur slowly, but would eventually have a moderate, negative cumulative impact on those visitors who wished to experience solitude, quiet, or a "rustic" park experience in frontcountry areas. There is also the potential for increased day use of trails going into the wilderness area from these roads. Although

the Park Service would limit use levels in the primitive and pristine zones, some unauthorized day use may occur in these areas.

Conclusion. Under the preferred alternative the existing range of visitor experiences would be maintained. Zoning most of the park as pristine would help ensure that visitors have many opportunities to experience solitude, quiet, and a feeling of being immersed in pristine resources throughout the recommended wilderness. Visitors would continue to have opportunities to have contact with and learn about park resources in the frontcountry. Providing a few new restrooms and picnic areas would have a minor, positive effect on some visitors' experiences. The new interim encounter rate limits would likely have a negligible effect on some visitors' experiences. The new interim encounter rate limits would likely have a negligible effect on most visitors in the recommended wilderness area. In some popular areas the limits would have a minor to moderate, positive effect by avoiding potential impacts due to increases in use. On the other hand, if visitors use on several trails and routes is limited or reduced, some visitors would be negatively affected and have to change their trip plans. A few saddle stock groups would be adversely affected to a minor to moderate degree by the application of the new zones in the recommended wilderness. Some visitors may feel their personal choices and access to park resources were being somewhat curtailed in the recommended wilderness area, which would have a moderate, negative impact on their experiences.

Overall, the preferred alternative would be expected to have minor, positive effect on visitors' experiences in the backcountry.

Visitor Experiences in Other Recreational Areas Near the Park

Analysis. Visitors who could not access the area of their choice at Zion might choose to go to other recreational areas. Similarly, if park managers restrict private vehicles on the Kolob Canyons Road, visitors might choose to visit other areas instead of Zion. This would likely have a negligible impact on the visitation at other nearby recreational areas because not very many people would tend to be displaced.

Cumulative Effects. Although some people would likely be displaced to other state and federal recreational areas as a result of the actions taken in this alternative, the overall number of displaced people is not likely to be large. Even if many of these people chose not to go to Zion or decided to cut their trips short, many of the displaced visitors would still be visiting these other recreational areas as part of their "Grand Circle" vacations. Thus, the preferred alternative would have a minor, negative cumulative effect on visitors' experiences in other nearby recreational areas.

Conclusion. With increased visitor use management, visitors would likely be displaced from Zion to other nearby recreational areas. The number of displaced visitors would not be expected to be large, however. Thus, the preferred alternative would likely have a minor, negative effect on the experiences provided at nearby recreational areas.

THE SOCIOECONOMIC ENVIRONMENT

Analysis. Under the preferred alternative, visitor use would likely continue to increase in line with recent experience at the park. With increased visitor use, some business activity in the local area may increase. This would result in increased positive benefits of a moderate to major degree for a small number of firms and/or individuals for the short and long term

(if the increased business activity could be sustained).

In addition, during the life of this plan, new developments would or could occur, which would provide some moderate to major, positive, short-term, economic benefits for a limited number of individuals and the enterprises involved with the developments. These recommended improvements would not all occur at one location or at the same time. The distribution of these developments through time and space would spread out the overall beneficial, economic impacts of these projects.

Economic opportunities within the park would be guided by a commercial services plan. These activities would create a moderate to major source of positive, short- and long-term economic benefits for a few persons and firms. The park would continue to provide the basis for the local tourism industry served by the private sector situated outside of the park. The effect on the local economy in terms of population, employment, income, etc., would be a negligible to minor, positive impact due to the relatively large size of the local economy compared to the actions in this alternative.

The preferred alternative seeks access easements totaling approximately 15 miles on lands outside the park and conservation easements on three privately owned parcels totaling 2,220 acres. The acquisition of some easement rights may require the exchange of federal money. In these cases, the individual landowners would receive a moderate, positive benefit by receiving public money, and the National Park Service would obtain a minor to moderate, positive benefit by acquiring the sought after easements. After the exchange, the value of the lands could be altered, with the value of some lands decreasing and the value of other adjacent lands increasing. However, the net change in local tax revenue is likely to be negligible.

As in the no-action alternative, increased levels of visitors going to the park and their concurrent demands for goods and services has led the private sector outside the park to increase levels of development and economic activity. It is expected that the gateway community of Springdale will experience further development. While the built environment of this area would continue to evolve, the small town "pioneer heritage" image would be fostered and protected by the local land use plan and zoning regulations. Continued increases in visitor use of the park would likely result in more frequent congestion and associated increases in the demands placed on local infrastructure and public services (e.g., roads, water and sewer, police and fire protection, and emergency medical services) in the gateway communities, especially Springdale. However, when comparing the impacts of this alternative to those of the no-action alternative, the amount of change due to this alternative would tend to be negligible.

Cumulative Effects. Zion National Park has been a protected area since 1909. As a result of increased visitation to the park, business and residential development have increased. This growth trend has had a moderate to major, positive impact on the local/regional economy. For example, a theater/shopping complex and new motels were built in Springdale in the 1990s, providing long-term employment opportunities for Springdale residents. It is expected that the positive effects of the growth trend on the local and regional economy will continue and that this alternative will not change the ongoing trend. The operation of the Zion Canyon shuttle system has resulted in additional NPS expenditures, which likely has had a positive, long-term benefit on the local and regional economy. Overall, the preferred alternative would be expected to have a long-term, negligible to minor, positive cumulative effect on the local and regional economy.

Conclusion. Increased visitation may result in positive economic benefits of a moderate to major degree for a small number of firms and/or individuals over both the short and long term. Various development projects would provide a few individuals and firms with short-term economic benefits that would be moderate to major (for those directly affected), depending on the level of involvement that occurred. However, in terms of the overall economy, these positive effects would be negligible to minor. Changes in cumulative impacts as compared to the impacts of the no-action alternative would be negligible. The gateway communities would likely continue to change, but they would only be negligibly different from the changes created by the no-action alternative. Overall, the preferred alternative would tend to have a long-term, negligible, positive change in the local/regional economy.

CONFLICTS WITH LAND USE PLANS

Analysis. Zion National Park is within the boundaries of Iron, Washington, and Kane Counties. All three counties have a general plan as required by enabling legislation passed by the Utah state legislature and reflected in section 17-27-301 of the Utah code. Portions of the Iron County general plan relating to national park areas focus on Cedar Breaks National Monument, with Zion being mentioned primarily for its impacts related to tourism and recreational opportunities.

The portions of the *Washington County* and *Kane County General Plans* relating to federal government coordination emphasizes the mandates of the Bureau of Land Management (BLM) and do not recognize the separate mandates applicable to the U.S. Forest Service or the National Park Service. For example, the *Washington County Plan* provides that this plan is to be used by federal land managing agencies in developing land use plans required

by section 202 of the Federal Land Policy and Management Act and 43 CFR, subpart 1601. Similarly, the *Kane County General Plan* recognizes "that federal law mandates multiple use of federally managed land . . ." and cites the Federal Land Policy and Management Act, 43 U.S.C. as the guiding legislation. In both cases, these provisions apply only to BLM and do not apply to either the U.S. Forest Service or the National Park Service, each having its own organic acts and policies for land use planning (see also "Clarification of Commonly Raised Public Concerns," concern 14).

The *Washington County General Plan's* recommendation that park land within Washington County not be managed as wilderness conflicts with NPS policy. According to *NPS Management Policies*, land that has been recommended to Congress as recommended wilderness must be managed in accordance with the provisions of the Wilderness Act.

All three plans emphasize the need for coordination and communication with federal land managing agencies. Many of the concerns that have surfaced have been because of inadequate communication and coordination.

Cumulative Effects. There would be no cumulative effects.

Conclusion. The 1978 wilderness recommendation identified in the *General Management Plan* would be in conflict with the *Washington County General Plan*.

UNAVOIDABLE ADVERSE EFFECTS OF THE PREFERRED ALTERNATIVE

Major, localized, adverse impacts on microbiotic soil crusts would continue to occur in

areas with extensive development and use. Unavoidable losses of microbiotic crusts also would tend to occur in areas with new developments, primarily along the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, Lava Point, Kolob Canyons Road, and the lower Zion Canyon.

The imposition of limits on backcountry use would have an unavoidable adverse impact on those visitors who might not be able to hike or camp in the backcountry area of their choice. If the number of private vehicles was limited on the Kolob Canyons Road, visitors would be inconvenienced or would potentially be unable to experience those areas. Some people would consider any limits on visitor choice to be an unavoidable adverse effect.

RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The restoration of natural processes along portions of the North Fork of the Virgin River would enhance long-term productivity of the biological resources associated with the river and its floodplain.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES OF THE PREFERRED ALTERNATIVE

Because it takes so long to form soil, the loss of soil due to the construction of new facilities (e.g., picnic areas and trails) would be an irreversible commitment of resources. No other irreversible or irretrievable commitments of resources under the preferred alternative are known.

IMPACTS OF ALTERNATIVE A: PROVIDE ADDITIONAL OPPORTUNITIES FOR USE AND ACCESS

NATURAL RESOURCES

Air Quality

Analysis. Air quality impacts under alternative A would be similar to the potential impacts of the no-action alternative. In general, this alternative provides opportunities for more widespread and increased visitor use of Zion. Improving access to the park and within the park could result in a moderate increase in vehicle emissions and a moderate reduction in near-range visibility.

The construction, removal, and improvement of facilities would generate particulates and machinery fumes that would result in some short-term, localized, minor impacts on air quality. Construction personnel would control dust by applying water or other palliatives; machinery would be required to meet emission standards.

Cumulative Effects. The planning team is not aware of any other actions that would have a negative cumulative impact on the park's air quality. As in the preferred alternative, the implementation of the voluntary Zion-Mt. Carmel Highway shuttle, combined with the Zion Canyon transportation system and other actions that minimize pollution sources in the park, would moderately reduce local emissions and improve near-range visibility.

Conclusion. Parkwide, little change would be expected in the park's air quality based on the actions in alternative A. There would be a moderate increase in vehicle emissions and decrease in near-range visibility along roads. Construction activities would result in minor, short-term, decreases in local air quality.

Water Quality

Analysis. Impacts under alternative A would be similar to the impacts of the preferred alternative. The construction and use of focused visitor facilities, parking areas/trailheads, picnic areas, campsites, and trails could result in minor increases in suspended sediment, turbidity, and petroleum residues in nearby streams. Construction impacts would be temporary and would be mitigated by the measures described under the preferred alternative. Increased turbidity would occur in localized areas where visitors eroded soils along stream banks and disturbed stream bottom sediments. Water pollution would also continue to occur from trash or human wastes deposited in or near streams. With increased use along some streams within the park, particularly along the intensively used reaches of the North Fork of the Virgin River, some localized decreases in water quality would likely occur. Similar to the efforts of the preferred alternative, with increased visitor management and the application of other mitigation measures, increased use would likely only lead to minor reductions in water quality.

The same effects described under the preferred alternative regarding river restoration activities would also apply to alternative A — the physical manipulation of the riverbanks or bed would result in moderate, short-term increases in turbidity. Increased sediment discharge would continue to occur intermittently for a few years, depending on the modifications made to the channel. However, the vast majority of this discharge would occur during flood events when the river was naturally very turbid.

Cumulative Effects. As in the previous alternatives, water pollution sources would

Conclusion. Localized, moderate to major, long-term impacts on microbiotic crusts would occur in areas of extensive development and use. Areas most likely to be impacted from new development include the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road (including the bike trail paralleling the road), Kolob Canyons Road (including picnic sites along the road), and lower Zion Canyon. Most of the park lands likely supporting microbiotic soils would not be subject to disturbance, however. From a parkwide perspective, the negative impacts on microbiotic crusts would be minor, based on the limited and localized extent of the impacts in relation to the widespread occurrence of the crusts in the park as a whole.

Virgin Spinedace

Analysis. Impacts would be similar to those of the preferred alternative. The restoration of the natural river morphology in portions of the North Fork below the Temple of Sinawava would create new larval nursery areas and support the regeneration of riparian vegetation. This would result in a minor to moderate, long-term improvement to habitat along portions of the North Fork.

River restoration measures that involve physical manipulation or disturbance to the riverbanks or bed would result in short-term increases in turbidity and sedimentation. Setting time limitations on instream disturbance activity and avoiding spawning periods would keep restoration impacts at negligible levels.

Increased visitor management efforts developed as part of the river management plan would minimize the potential for new impacts and potentially enhance the spinedace population within disturbed areas. Depending on the extent and type of management measures implemented by park personnel, increased visitor management would result in

minor to moderate, long-term benefits to the North Fork spinedace population.

Negligible to minor impacts would occur on spinedace populations elsewhere in the park. Allowing public use within Parunuweap Canyon would likely have negligible adverse effects on the East Fork spinedace population because of the low levels and high regulation of use. Very low levels of research and educational use would occur in the Shunes Creek research natural area, which also would result in negligible to minor impacts on spinedace habitat. Depending on the structures used to divert water from Shunes Creek under an existing private water right, spinedace populations there could be temporarily negatively impacted. Park managers are assessing the impacts of this action in a separate environmental assessment.

Although North Creek would be a primitive zone under alternative A, which would allow increased levels of use, spinedace extend for only a very short distance into the park along North Creek. No large increases in public use are likely in this reach because no designated trails or routes are located here, and visitors would continue to be inclined to travel farther upstream into the park. Thus, impacts also would be negligible on this spinedace population.

Cumulative Effects. Cumulative impacts would be similar to the preferred alternative. The minimization of impacts through greater management of recreational use and improvements to habitat from river restoration would provide increased protection to the North Fork population. This would be a major, long-term, beneficial effect.

Conclusion. Although turbidity would continue to affect spinedace that fed in high recreation use areas along the North Fork, increased visitor management would minimize the potential for new impacts. Some negligible, short-term increases in turbidity would

occur due to river restoration measures, but in the long term, these measures would potentially enhance the population within disturbed areas. Therefore, there would be a minor to moderate, long-term benefit to the North Fork population. Impacts on other spinedace populations in the park would be negligible to minor due to very low and/or restricted recreational use levels. There would be a major, long-term, cumulative benefit due to further protection and potential enhancement of the park's spinedace population.

Mexican Spotted Owls

Analysis. Like in the preferred alternative, most of the proposed new focus 1 visitor facilities, parking areas, campgrounds, and picnic areas would be located outside of the park's known owl territories. However, picnic sites and short nature trails could be built in owl territories along the Zion-Mt. Carmel Highway and nature trails could be added to the lower parts of canyons, north of the road that the owls are known to use. The specific locations for these developments have not been determined, but picnic areas would be located in previously disturbed sites along the road. Some of these existing pullouts are within two owl territories.

To avoid impacts on the owls, park managers would evaluate specific picnic area and trail locations on a case-by-case basis in consultation with the U.S. Fish and Wildlife Service. They would locate the picnic areas and trails in such a way as to discourage visitation into the canyons the owls are known to use, and would not build these picnic areas and trails during the breeding/nesting season. Zoning the lower canyons north of the road that were used by owls as primitive and the upper portions of the canyons as pristine, and taking appropriate management actions to maintain zone conditions, also would keep visitor numbers at low to very low levels.

As in the other alternatives, very popular trails pass through three owl territories associated with side canyons off of the main Zion Canyon, below the Temple of Sinawava. If warranted by recreational impact monitoring data, portions of the trails where owls were typically found would be closed or signs would be added to the areas to keep people on the trails and out of the side canyons frequented by the owls. These actions would mitigate the potential effects from increased visitation in these areas.

All of the other known owl territories are in research natural areas, pristine areas, or primitive areas. These zones allow only limited educational or research use, or allow only very low to low levels of recreational use. The zone conditions regarding group sizes and encounter levels would further limit impacts on owls in these zones. Hiking would typically occur during the day, and people would travel in and out of an owl's presence relatively quickly. Park managers would not locate any new designated camping sites in owl territories. Dispersed camping would continue in the pristine and primitive zones, but assuming that visitors used a variety of locations, there would be a low probability of repeated camping in locations near a nest or roost site. If future surveys indicated that visitors were camping near identified nest or roost sites, park personnel would restrict camping at these locations. Low levels of use may affect the behavior of some owls. Park personnel would continue to monitor owl nesting activity and productivity to assess potential impacts, and would implement visitor use restrictions if necessary.

Cumulative Effects. The Zion Canyon shuttle system would be the only action that potentially could result in a cumulative impact. As part of the Zion Canyon transportation system planning process, the implementation of a canyon shuttle system and the construction of shuttle stops, with the associated increased use of trails through the side canyons that support

owl territories, were evaluated. That planning process identified trail closures, as noted above, as a way to mitigate the effects of increased use. No cumulative effects are expected.

Conclusion. This alternative is not likely to adversely affect the productivity of known spotted owl territories.

Southwestern Willow Flycatcher

Analysis. Willow flycatcher habitat in Parunuweap Canyon would not likely be adversely affected because there would only be limited NPS or NPS-sanctioned guided educational trips through the canyon. Travel paths would be designated, which would avoid known or potential flycatcher habitat. There would also be no new development or recreational use along Birch Creek.

As under the preferred alternative, impacts to riparian areas from restoration of portions of the North Fork of the Virgin River would be short-term. The restoration would improve riparian habitat and potentially flycatcher habitat. However, no records exist that document the occurrence of this species there. The river management planning process would address the specific strategies and methods for restoring the river and managing visitor use. That plan would more closely evaluate impacts of the North Fork restoration effort, including potential benefits to flycatchers.

Under this alternative, visitor use levels in portions of the backcountry would be higher than under the preferred alternative. However, with implementation of increased visitor management efforts, use limits, and/or mitigation measures to maintain zone condition, the potential for impacts on riparian areas/ potential flycatcher habitat would be negligible to minor.

Cumulative Effects. The southwestern willow flycatcher has been adversely affected

by the conversion or destruction of native riparian habitats. The park represents a significant portion of the upper Virgin River watershed. The protection and improvement of riparian habitat in the park would have a positive, long-term, moderate cumulative impact on riparian areas within the watershed, which could benefit flycatchers.

Conclusion. Alternative A might affect, but would not likely adversely affect the southwestern willow flycatcher. Although potential impacts might occur, with implementation of mitigation measures and visitor management actions, the impacts would not likely adversely affect the species. Restoration of riparian habitat along the North Fork might result in long-term beneficial effects.

Desert Bighorn Sheep

Analysis. In this alternative park managers would allow low levels of visitor use along the drainage bottom of Parunuweap Canyon (a pristine zone) and limited educational or research use along Shunes Creek (a research natural area). In addition, under alternative A, the sides of Parunuweap Canyon would be included in a research natural area zone. With the proposed closure periods, only negligible to minor impacts from research activities would occur within lambing areas.

With regard to sheep foraging areas, negligible disturbance would occur in Shunes Creek due to its zoning. Allowing visitor use within Parunuweap Canyon and adding trails or routes in canyons north and south of the Zion-Mt. Carmel Highway could promote increased visitor use in areas used by sheep for foraging. Restricting the use of Parunuweap Canyon would result in negligible to minor disturbance to foraging sheep, which would occur primarily during the fall when the sheep came to the East Fork to drink. Disturbances to foraging sheep in canyons along the highway route would be minor to moderate

because the upper portions of the canyons and slopes (including important habitat in Gifford Canyon) would be within a primitive zone, where increased use levels of up to 100 people per day would be allowed.

In alternative A park personnel could build picnic sites and short nature trails along the Zion-Mt. Carmel Highway. Adding these new developments in areas along the road that are currently used or disturbed would negligibly affect sheep in the vicinity of the Zion-Mt. Carmel Highway or sheep road crossings.

The potential increase in visitor use over a large portion of the sheep's range on either side of the Zion-Mt. Carmel Highway would be a minor to moderate, short-term disturbance to sheep foraging areas. It would be a major impact if the sheep were displaced from key portions of their range.

Cumulative Effects. There would be no cumulative impacts on this species. The sheep may be affected if air tours occur over sheep range in the park. An air tour management plan would be prepared to address this use and the potential impacts on sensitive wildlife such as sheep.

Conclusion. Research activities could cause negligible to minor impacts on lambing areas. Visitor disturbance in foraging areas would be negligible to minor due to zone conditions (i.e., allowance of only very low levels of use), seasonal closures, and other use restrictions. Impacts on sheep would be minor to moderate in sheep habitat located within canyons along the Zion-Mt. Carmel Highway due to increased visitor use occurring over a large portion of the sheep's range on either side of the highway. It would be a major impact if sheep were displaced from key portions of their range.

VISITOR EXPERIENCES AND USES

Natural Sounds

Analysis. Noise impacts under alternative A would be similar to those in the no-action alternative. This alternative would provide opportunities for more widespread and increased visitor use of Zion. Improving access to and within the park would result in a moderate increase in noise impacts. However, in this alternative, the voluntary shuttle system on the Zion-Mt. Carmel Highway would reduce vehicle traffic, resulting in a minor reduction in noise impacts compared to the no-action alternative.

Cumulative Effects. The operation of the Zion Canyon transportation system would substantially reduce mechanical noises from vehicular traffic. This action, in combination with the reduction of some other noise sources in the canyon, would result in an overall moderate, long-term positive effect. If aircraft flights over the park increased, however, the noise of the aircraft combined with increased use levels would result in a negative cumulative impact on the natural soundscape.

Conclusion. Higher use levels in the park would lead to a moderate increase in noise impacts. However, mitigation would reduce some noise sources, and the shuttle system on the east side of the park could result in a minor reduction in noise levels.

Range of Visitor Experiences and Activities

Analysis. Alternative A generally would have the same type of effects on visitor experiences and uses as the preferred alternative. The new management zones would have a positive effect, helping to maintain the existing range of visitor experiences. Even if use levels continued to increase, visitors seeking solitude and natural soundscapes should be able to find remote wildlands to enjoy, while other visitors seeking a more social and developed experi-

ence should be able to find opportunities for these types of experiences in the frontcountry.

Under alternative A, most visitors would continue to spend their time in the park's frontcountry, staying in or near the developed areas. The future carrying capacity studies and river management plan may propose limits on use of some areas. (The impacts of these actions would be assessed if and when the actions are proposed.) However, the development of short nature trails and visitor facilities would provide new opportunities for a greater number of visitors to enjoy more of the park than they can now. Thus, this alternative would have a positive, moderate effect on visitors in the frontcountry.

Acquiring access easements would have the same effects as those described under the preferred alternative — the easements would ensure that visitors could still access several popular trails and routes that currently passed through private land. Thus, this action would have a major, positive impact on visitors who used those routes.

The visitor use and experience impacts of alternative A in the south entrance and main Zion Canyon would be the same as those described for the preferred alternative. The effects of the proposed boundary adjustments also would be the same.

Kolob Canyons Road — Alternative A would have similar positive impacts as those of the preferred alternative regarding increased opportunities for hiking, interpretation, and picnicking. However, unlike the preferred alternative, there would be no limits on the number of vehicles or shuttles allowed under this alternative. If visitation increased, crowding, noise levels, and the degradation of park resources may occur (e.g., increased litter, more social trails), which would have a minor, negative impact on visitors who valued natural soundscapes, solitude, and the opportunity to view the park in a natural state.

Kolob-Terrace Road and Lava Point — Alternative A would provide a greater number of opportunities than currently exists for picnicking, additional interpretive services, better parking facilities, more campsites at Lava Point, and easier access to trailheads. These changes would have a minor, positive impact on those visitors who valued a more structured experience, and a minor, negative impact on those visitors who valued a more primitive and rustic experience. Any increase in use as a result of the above actions could result in some resource impacts that would negatively affect the experience of some visitors. Limiting traffic or providing shuttles would reduce or eliminate these impacts, but some visitors would be adversely affected if they could not experience the Lava Point area.

Building a focused visitor facility on BLM lands along the Kolob-Terrace Road would have the same minor, positive effects on the visitor experience as the effects discussed under the preferred alternative. The facility would provide information to enhance visitors' understanding of the park and a more convenient place to obtain permits, as well as improve the park staff's response time for assisting visitors in need of search and rescue.

Under this alternative, a bicycle trail along the Kolob-Terrace Road to Lava Point could be developed. This trail would provide a safe, long-distance bicycling experience currently unavailable at Zion, which might encourage more bicycle riders to explore the park, enjoy its resources, and understand its significance. This action thus would have a moderate, positive impact on those visitors who rode bicycles at Zion.

Also under alternative A, the opening of the road to the east of the West Rim trailhead would provide visitors with an additional opportunity for scenic driving, during which they could come into contact with park resources. This change would have a minor, positive impact for visitors who valued

opportunities for motorized sightseeing, but a minor, negative impact for visitors seeking a more rustic experience.

East Entrance and Zion-Mt. Carmel Highway

— The effects of this alternative would be very similar to those described in the preferred alternative. However, in alternative A there may be additional focused visitor facilities and a couple of nature trails. As a result visitors would potentially have more interpretive opportunities and opportunities to hike in this part of the park. This would have a minor, positive effect on visitors who use the Zion-Mt. Carmel Highway.

Recommended Wilderness — Under alternative A, the majority of the recommended wilderness would be a primitive zone, with a smaller portion being a pristine zone. This zoning structure would provide greater opportunities for hiking on trails and utilizing designated backcountry campsites than are available today, but fewer opportunities for experiencing solitude than are now available. With the upgrading of some trails and the addition of several new primitive trails and routes in the recommended wilderness, more visitors could see and experience parts of the recommended wilderness area they likely would not have otherwise visited. This would have a moderate, positive impact for those visitors who valued hiking on trails in a wildland setting.

Under alternative A, park managers would open the East Fork of the Virgin River in Parunuweap Canyon to small numbers of visitors, under certain conditions. This action would provide a new high-quality educational visitor experience and result in a moderate, positive impact on the experiences of those visitors who were permitted to enter Parunuweap.

Like the preferred alternative, the new interim encounter rate limits would likely have a negligible effect on most backcountry users — in most areas people would continue to find opportunities for solitude and natural soundscapes, and the new interim limits would not affect them. In a few popular areas, such as the Narrows above Orderville Canyon, the encounter limits would help ensure that use levels did not increase substantially, thus avoiding potential visitor experience impacts. For those visitors who would be seeking a wilderness experience at Zion and were willing and able to be flexible, the encounter limits likely would have a minor to moderate, positive impact, compared to the no-action alternative.

Alternative A would have some negative effect on visitors in the recommended wilderness. Any restrictions that affect personal choice and access would be seen by some as detracting from their park visit. Some visitors may experience a minor to moderate, negative impact if group sizes or encounter rates exceed their wilderness experience expectations. For those visitors who sought a less-crowded experience in areas with no trails, the addition of trails or routes in previously untraveled areas could have moderate, negative effects. Some visitors would potentially be inconvenienced before entering the recommended wilderness (e.g., by getting permits, making reservations).

Compared to existing conditions, visitor numbers may need to be limited or reduced in four areas — the Narrows above Orderville Canyon, Orderville Canyon, Mystery Canyon, and La Verkin Creek trail. While the net effect on backcountry use would probably be negligible to minor, some redistribution of use among trails and routes would likely occur. The new encounter rate limits might mean that some visitors would have to change their destination, or the timing of their trip. For those visitors who valued being able to visit chosen destinations when and how they

wanted to, alternative A would likely have a minor, negative impact.

Alternative A would have the same effect on saddle stock groups as the preferred alternative: saddle stock groups would continue to find the same opportunities to ride in the park as they do now, except that they would no longer be permitted to ride in the upper Coalpits Wash and Dalton Wash/Crater Hill areas. This action would have a minor effect on opportunities for saddle stock groups.

As noted in the alternative, the wilderness management plan and carrying capacity studies would determine if guided activities should be permitted in Zion backcountry. If it were determined that guided activities were appropriate, under alternative A much of the recommended wilderness would be zoned primitive and could be open to commercial guiding. The impact on users would vary depending on such factors as where the guides would be permitted to operate, at what times they could operate, and how many guides (if any) would be operating. These potential impacts would be further analyzed as part of the environmental documentation for the wilderness management plan.

Research Natural Areas — Approximately 6,310 acres of Zion's recommended wilderness would be in research natural area zones and therefore only open to NPS-guided educational trips and research. With the exception of the upper Coalpits Wash, these areas currently receive little or no recreational use. As a result, managing these areas as research natural areas (and therefore prohibiting public recreational use) would have a negligible impact on most visitors' experiences. A few visitors who wished to visit the research natural areas but were turned away could feel this is a detraction from their park experience. Also, designating upper Coalpits Wash as a research natural area would displace a few visitors, but they probably

could find other destinations in the park to visit.

Scenic Views — Alternative A would have many of the same effects on the park's viewshed as the preferred alternative. In both alternatives the park's viewshed would continue to appear natural to most visitors. Acquiring the conservation easements also would have a moderate, positive impact, ensuring that visitors would continue to experience views of the park without scenic impairments.

In this alternative several additional facilities besides those in the preferred alternative would be built in the park, including focused visitor facilities, interpretive facilities, a new bicycle trail, and expansion of the Lava Point campground. With proper siting, facility design, and landscaping, it is expected that the impacts of these new facilities on the visual landscape would be minimized. The developments would likely have a minor, negative impact on the experiences of visitors who valued a less-developed visual scene.

Cumulative Effects. Alternative A would have the same potential for cumulative effects as in the preferred alternative. The increased management of backcountry use in conjunction with the operation of the Zion Canyon shuttles would mean that visitors would have less personal choice than they do today. However, the shuttles would also ensure that visitors could stop at major attractions in the Zion Canyon without having to compete for parking spaces. The extent of the impacts on visitors would depend on the decisions park managers made in several subsequent implementation plans.

The new developments proposed in alternative A, together with the operation of the Zion Canyon shuttles, are likely to result in increased use levels over time in other frontcountry areas, including the Kolob Canyons Road, Kolob-Terrace Road, and the

Zion-Mt. Carmel Highway. As overall park visitation increased, visitors could experience more crowding and noise and observe more resource impacts at the facilities and trails in these frontcountry areas. The changes would likely occur slowly over time, but would eventually have a moderate, negative cumulative impact on those visitors who wished to experience solitude, quiet, or a "rustic" park experience in the frontcountry. There is also the potential for increased day use of trails going into the wilderness area from these roads. Although park managers would limit use levels in the primitive and pristine zones, some unauthorized day use may occur in these areas.

Conclusion. Under alternative A, park managers would maintain the existing range of visitor experiences. In the frontcountry, there would be enhanced opportunities for visitors to have contact with and learn about park resources. Opportunities for experiencing solitude, quiet, and the feeling of being immersed in pristine park resources would still be available in the recommended wilderness area. Visitors would have a number of additional opportunities to experience the park's recommended wilderness, including Parunu-weap Canyon, through primitive trails and routes. This would have a moderate, positive impact on visitors desiring those experiences.

On the other hand, the new trails and routes may result in higher encounter levels with people, which would have a negative impact on other visitors. There may be a reduction in levels of use on a few routes. Some visitors may feel their personal choices and access to park resources are being somewhat curtailed, particularly in the recommended wilderness area, which would have a moderate, negative impact on their experience. Overall, alternative A would be expected to have moderate, positive effects on the range and quality of visitor experiences in Zion's frontcountry, and moderate, positive and negative effects on visitor experiences in the backcountry.

Visitor Experiences in Other Recreational Areas Near the Park

Analysis. Alternative A would have the same effects on other nearby recreational areas as the effects of the preferred alternative. If park personnel restrict private vehicles on the Kolob Canyons Road, visitors might choose to visit other areas instead of Zion. This action would tend to have a negligible impact on the visitation at other nearby recreational areas because not very many people would likely be displaced.

Cumulative Effects. Like in the preferred alternative, alternative A would have the potential for a minor cumulative effect on the visitor experience in other recreational areas. The overall number of people who would be displaced from Zion to other state and federal areas as a result of this alternative would not likely be large. Even if visitors spent less time at Zion or chose not to visit Zion at all, many of these visitors would still be visiting these other recreational areas as part of their "Grand cle" vacations.

Conclusion. With increased visitor use management, some but not many visitors would likely be displaced from Zion to other nearby recreational areas. Thus, the preferred alternative would likely have a negligible to minor, negative effect on the experiences provided at nearby recreational areas.

THE SOCIOECONOMIC ENVIRONMENT

Analysis. Alternative A encourages increased visitor use in some areas of the park. With increased use, some business activity in the local area may increase, resulting in increased positive benefits of a moderate to major degree for a small number of firms and/or individuals involved with the activities. These benefits could occur over both the short and long term. In addition, various development projects would provide a few individuals and

firms with positive, short-term economic benefits. Depending on the level of development that occurs, these benefits would be moderate to major, with the individuals and firms more directly involved with the developments experiencing greater effects. While some individuals may benefit, the overall impact on the local economy in terms of population, employment, income, and the like, would be a negligible to minor, positive impact, due to the relatively large size of the local economy compared to the actions in alternative A.

As in the no-action alternative, the increased numbers of visitors to the park and their concurrent demands for goods and services has caused the private sector outside the park to increase development and economic activity. It is likely that the gateway community of Springdale would continue to experience further development. While the built environment of this area would continue to evolve, the small town "pioneer heritage" image would be protected and fostered by the local land use plan and zoning regulations. Continued increases in visitor use of the park would likely result in more frequent congestion and associated increases in the demands placed on local infrastructure and public services (e.g., roads, water and sewer, police and fire protection, and emergency medical services) in the gateway communities, especially Springdale. However, when comparing these impacts to those of the no-action alternative, the amount of change due to this alternative would tend to be negligible, even though the pace of development may be somewhat faster as a result of the actions of alternative A.

Cumulative Effects. Zion National Park has been a protected area since 1909. As a result of increased visitation to the park, business and residential development have increased. This growth trend has had a positive impact on the local/regional economy, which is likely to continue in the future and not change based on

the actions of this alternative. The operation of the Zion Canyon shuttle system has resulted in additional NPS expenditures, which also likely has had a positive, long-term benefit on the local and regional economy. Overall, the planning team expects alternative A to have a long-term, negligible to minor, positive cumulative effect on the local and regional economy.

Conclusion. The park would continue to contribute to the local economy in the short and long run. Some individuals and firms within the region may receive moderate to major, positive, short-term economic benefits as a result of alternative A; however, in terms of the overall economy, these positive effects would be negligible to minor in scope. It is likely that development within the gateway communities would proceed at a faster pace under alternative A, although the development would have an overall negligible effect. In general, alternative A would likely result in a negligible to minor, positive change in the local/regional economy.

CONFLICTS WITH LAND USE PLANS

Analysis. Zion National Park is within the boundaries of Iron, Washington, and Kane Counties. All three counties have a general plan as required by enabling legislation passed by the Utah state legislature and reflected in section 17-27-301 of the Utah code. Portions of the Iron County general plan relating to national park areas focus on Cedar Breaks National Monument, with Zion being mentioned primarily for its impacts related to tourism and recreational opportunities.

The portions of the *Washington County* and *Kane County General Plans* relating to federal government coordination emphasizes the mandates of the Bureau of Land Management (BLM) and do not recognize the separate mandates applicable to the U.S. Forest Service

or the National Park Service. For example, the *Washington County Plan* provides that this plan is to be used by federal land managing agencies in developing land use plans required by section 202 of the Federal Land Policy and Management Act and 43 CFR, subpart 1601. Similarly, the *Kane County General Plan* recognizes "that federal law mandates multiple use of federally managed land..." and cites the Federal Land Policy and Management Act, 43 U.S.C. as the guiding legislation. In both cases, these provisions apply only to BLM and do not apply to either the U.S. Forest Service or the National Park Service, each having its own organic acts and policies for land use planning.

The *Washington County General Plan's* recommendation that park land within Washington County not be managed as wilderness conflicts with NPS policy. According to NPS *Management Policies*, land that has been recommended to Congress as recommended wilderness must be managed in accordance with the provisions of the Wilderness Act.

All three plans emphasize the need for coordination and communication with federal land managing agencies. Many of the concerns that have surfaced have been because of inadequate communication and coordination.

Cumulative Effects. There would be no cumulative effects.

Conclusion. The 1978 wilderness recommendation identified in the *General Management Plan* would be in conflict with the *Washington County General Plan*.

UNAVOIDABLE ADVERSE EFFECTS OF ALTERNATIVE A

Alternative A would have similar unavoidable impacts on the park's microbiotic soil crusts

as the impacts of the preferred alternative. Major, localized adverse impacts on microbiotic soil crusts would continue to occur in areas with extensive development and use. Unavoidable losses of microbiotic crusts also would tend to occur in areas with new developments, primarily along the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, Lava Point, Kolob Canyons Road, and the lower Zion Canyon. With regard to visitor experiences, alternative A would have about the same potential for unavoidable adverse effects as the preferred alternative. The imposition of use restrictions in the recommended wilderness area would have an unavoidable adverse impact on those visitors who were not able to hike or camp in the area of their choice. Some individuals would consider any limitations on visitor choice to be an unavoidable adverse effect.

RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The restoration of natural processes along portions of the North Fork of the Virgin River would enhance long-term productivity of the biological resources associated with the river and its floodplain.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES FOR ALTERNATIVE A

Because it takes so long to form soil, the loss of soil due to construction of new focused visitor facilities, picnic areas, and trails would be an irreversible commitment of resources. The planning team is not aware of any other irreversible or irretrievable commitments of resources that would occur under alternative A.

beneficial effect that would incrementally increase the amount of riparian habitat in the park.

With increased visitor management efforts (developed as part of the river management plan) and possible revegetation of portions of the North Fork, impacts on vegetation would be further minimized. Thus, alternative B would have a minor to moderate beneficial effect, with the greatest benefits occurring in sections with present channelization and heavy use.

Riparian communities elsewhere in the park would remain relatively intact. With a high proportion of the park being pristine and research natural area zones, this alternative would result in decreased use and fewer impacts in many of the backcountry trails and routes in canyon bottoms. Most impacts on riparian communities due to trampling would be negligible.

Cumulative Effects. Cumulative impacts of alternative B would be similar to those of the preferred alternative. The protection and improvement of riparian habitat in the park would have a moderate, positive cumulative impact on riparian areas within the Virgin River watershed.

Conclusion. Under alternative B, overall impacts on riparian communities within the park from recreational use would be negligible. The restoration of the flows of six springs would result in a minor, long-term increase in the riparian zone along the small streams supported by these springs. The restoration of riparian habitat along the North Fork would result in a moderate, long-term, beneficial, localized impact. From a watershed perspective, these actions would have a moderate beneficial effect.

Hanging Gardens

Analysis. Five hanging gardens located within Zion Canyon and Parunuweap Canyon would be in research natural area zones. This designation would afford additional protection to the gardens in that very few people would have access to them. With continued application of mitigation measures, damage or loss of vegetation would be limited, resulting in minor adverse impacts.

Cumulative Effects. Past human impacts on several hanging gardens have been substantial, but they have mitigated by building trails and barriers that prevent contact with the gardens. Consequently, although several hanging gardens have been readily accessible, loss of vegetation has been minor. Continued mitigation, coupled with reduced use levels, would result in a moderate, long-term, beneficial cumulative impact to hanging gardens.

Conclusion. Alternative B would have the same positive impact on hanging gardens as that of the preferred alternative.

Microbiotic Crusts

Analysis. As in all of the alternatives, moderate to major, localized disturbance to soils in developed and high use areas would continue to occur — primarily along the east entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, and Kolob Canyons Road. For example, soil disturbances and loss of microbiotic crusts would continue from people walking off of trails in front-country high development, front-country low development, and transition zones. The construction of some new developments, such as the east side visitor center, also could result in the long-term loss of soils or disturbance from erosion and soil compaction. To minimize these impacts, new developments would be located in previously

disturbed areas or away from microbiotic crusts where possible.

Unlike the other alternatives, in alternative B, there would be a decrease in visitor use and the removal of many visitor facilities, including trails, trailheads and parking spaces, due to zoning requirements. The decrease in visitor use and the reduction of roadside parking along the Zion-Mt. Carmel Highway would lead to minor to moderate localized reductions in soil compaction and erosion.

Zones that allow for little development (primitive) or no development (pristine and research natural areas) would cover most of the park. Therefore, trails and campsites could be located in areas with little or no impact to microbiotic crusts. Impacts on microbiotic crusts would still occur due to people who hiked off trails. However, visitor numbers would be very low, thus reducing the potential number of off trail hikers or hikers in areas without trails. Soil impacts in these zones would be minor.

Cumulative Effects. In general, many of the soils in the park have recovered from the effects of past grazing, farming, and logging. Permanent loss of microbiotic crusts has occurred in developed areas, such as roads, trails, and buildings, although most of the park lands that likely support microbiotic crusts would not be subject to new disturbance. Because of the limited and localized extent of new impacts, this alternative would have a minor cumulative impact.

Conclusion. Most of the park lands likely supporting microbiotic soils would not be subject to disturbance. In a few areas with extensive development and use, localized, long-term, adverse, moderate to major impacts on microbiotic crusts would continue, however. The reduction in visitors would cause a minor to moderate, localized

reduction in soil compaction and erosion, primarily along the Zion-Mt. Carmel Highway and in much of the lower Zion Canyon. From a park-wide perspective, with reduced use levels and fewer developments, alternative B would have a minor, long-term positive impact on microbiotic crusts.

Virgin Spinedace

Analysis. As under the preferred alternative, under alternative B, river restoration efforts and increased visitor management would result in a long-term improvement to spinedace habitat along portions of the North Fork and potentially to the entire population. River restoration efforts could result in short-term increases in turbidity, but these impacts would be negligible, if the restoration work does not occur during spawning periods. There would be a minor to moderate, long-term benefit to the fish population along the North Fork.

Negligible to minor impacts would be expected to populations of spinedace elsewhere in the park. Low to very low use levels would occur in the East Fork in Parunuweap Canyon and Shutes Creek research natural area zones, the Left Fork, pristine zone, and the Right Fork research natural area zone. Depending on the structures used to divert water from Shutes Creek under an existing private water right, spinedace populations there could be negatively impacted temporarily. The impacts of this action are being evaluated in a separate environmental assessment.

Cumulative Effects. Cumulative impacts would be similar to those of the preferred alternative. Minimizing the impacts on spinedace through greater management of recreational use (based on the implementation of a river management plan), river restoration efforts, and inclusion of much of the river in a primitive zone would provide

increased protection to the North Fork population. This protection would be a major, long-term, beneficial effect.

Conclusion. Increasing visitor management and restoring the river would protect and potentially enhance the spinedace population, creating a minor to moderate, long-term benefit to the North Fork population of this species. Impacts on spinedace populations elsewhere in the park would be negligible to minor due to very low and/or restricted recreational use levels. Overall, there would be a major, long-term, cumulative benefit to spinedace based on further protection and potential enhancement of the park's population.

Mexican Spotted Owls

Analysis. Under this alternative, no facilities would be built in any known owl territory in the park, with the exception of picnic sites along the Zion-Mt. Carmel Highway. Specific locations for the new picnic sites have not been determined, but they would be located in previously disturbed sites along the road. Some of these existing pullouts are within two owl territories. Consultation with the U.S. Fish and Wildlife Service, careful siting of the picnic areas in locations that would not encourage visitors to go into canyons used by owls, and the construction of the facilities outside of the breeding/nesting season, should avoid impacts on the owls. Zoning all the canyons north of the highway that are used by owls as pristine areas would also help to ensure that only very low use levels occurred in these areas.

As in the other alternatives, very popular trails pass through three owl territories associated with side canyons off of the main Zion Canyon, below the Temple of Sinawava. If the results of recreational impact monitoring warranted it, park managers would close portions of these trails

where owls were typically found or add signs to keep people on the trail and out of side canyons frequented by owls. These actions would mitigate potential effects from increased visitation in these areas.

All of the other known owl territories are in primitive, pristine, and research natural areas. With this zoning, very low levels of use would occur in the owl territories. Hiking would typically occur during the day and take people in and out of an owl's presence relatively quickly. The zone conditions regarding group sizes and encounter levels would further limit impacts on owls. Additionally, park managers would not locate any new designated camping sites in owl territories. Dispersed camping would continue in the pristine zones, but assuming a variety of locations were used, there would be a low probability of repeated camping in locations near a nest or roost site. If future surveys indicated that visitors were camping near identified nest or roost sites, camping would be restricted in these locations.

Very low levels of use may affect the behavior of some spotted owls. Park personnel would continue to monitor owl nesting activity and productivity to assess potential impacts and would restrict visitor use if necessary to mitigate these impacts.

Cumulative Effects. The Zion Canyon shuttle system would be the only action that potentially could result in a cumulative impact. The Zion Canyon transportation system planning process evaluated the implementation of a canyon shuttle system and the construction of shuttle stops, with the associated increased use of trails through side canyons supporting owl territories. That process identified trail closures, noted above, as a way to mitigate effects of increased use. No cumulative effects are expected.

Conclusion. Alternative B is not likely to adversely affect the productivity of known

spotted owl territories. Of all the alternatives of this plan, alternative B would have the least potential for affecting owls, due to the predominant occurrence of owl territories within research natural areas and pristine zones, which are most prevalent in alternative B.

Southwestern Willow Flycatcher

Analysis. Like in the preferred alternative, willow flycatcher habitat in Parunuweap Canyon would not likely be adversely affected because although there would be limited research related use, there would be no development or recreational use through the canyon. There would also not likely be adverse effects on willow flycatcher habitat in Birch Creek because there would be no new development or recreational use along Birch Creek.

Impacts to riparian areas from restoration of portions of the North Fork of the Virgin River would be short term. The restoration would improve riparian habitat and potentially flycatcher habitat. However, no records exist that document the occurrence of this species there. The river management planning process would address the specific strategies and methods for restoring the river and managing visitor use. That plan would more closely evaluate impacts of the North Fork restoration effort, including potential benefits to flycatchers.

Impacts from increased recreational use on riparian areas along the North Fork and elsewhere in the park would be negligible to minor with the implementation of increased visitor management efforts, mitigation measures such as on-site reclamation or trail improvements, and continued Park Service flycatcher surveys that would help management avoid or minimize impacts to flycatcher habitat.

Cumulative Effects. The southwestern willow flycatcher has been adversely affected by the conversion or destruction of native riparian habitats. The park represents a significant portion of the upper Virgin River watershed. The protection and improvement of riparian habitat in the park would have a positive, long-term, moderate cumulative impact on riparian areas within the watershed that could benefit flycatchers.

Conclusion. Alternative B might affect, but would not likely adversely affect, the southwestern willow flycatcher. Although potential impacts might occur, with implementation of mitigation measures and visitor management actions, the impacts would not likely adversely affect the species. And restoration of riparian habitat along the North Fork might result in long-term beneficial effects.

Desert Bighorn Sheep

Analysis. Zoning Parunuweap Canyon and Shunes Canyon as research natural areas would preclude recreational use and thus provide continued protection to sheep range and lambing areas. Negligible to minor impacts from research activities could occur. Similarly, zoning canyons and slopes south of the Zion-Mt. Carmel Highway as research natural areas and pristine areas, including important foraging areas in Gifford Canyon and Crawford Wash, would provide further protection to sheep range. These actions would reduce visitor use from already relatively low levels, which would be a minor, long-term, beneficial effect. The addition of picnic sites and short nature trails at existing pullouts/trailheads would negligibly affect sheep use or sheep road crossings.

Cumulative Effects. There would be no cumulative impacts on this species. The sheep may potentially be affected if air tours

occur over sheep range in the park. An air tour management plan would be prepared to address this use and the potential impacts on sensitive wildlife such as sheep.

Conclusion. Prohibiting recreational use would prevent impacts on lambing areas, although negligible to minor impacts from research activities could occur. Prohibiting or slightly reducing visitor use in most of the sheep's range, primarily Parunuweap and Shunes Canyons and other areas south of the Zion-Mt. Carmel Highway, would create a minor benefit to sheep, compared to existing conditions.

VISITOR EXPERIENCES AND USES

Natural Sounds

Analysis. This alternative reduces the number of park facilities and visitor use levels, which would result in minor to moderate reductions in noise impacts throughout the park. With fewer people visiting the upper Zion Canyon, due to the termination of the shuttle system at the Zion Lodge, there would be a moderate decrease in impacts on the natural soundscape in the upper canyon. The mandatory shuttle system operating on the Zion-Mt. Carmel Highway would reduce traffic, which would result in a moderate reduction of noise impacts. Restricting the number of vehicles along the Kolob Canyons Road and Kolob-Terrace Road may be required in the future to fulfill zone prescriptions. This action would reduce noise impacts to a minor degree compared to the no-action alternative.

Cumulative Effects. The operation of the Zion Canyon transportation system in combination with the reduction of some other noise sources in the canyon, would result in an overall moderate, long-term, positive effect. If aircraft flights increased, there could be a negative cumulative impact on the natural soundscape, especially in the

undeveloped areas of the park where solitude and natural soundscape are zoned for the most protection.

Conclusions. With a substantial decrease in visitor use in alternative B, there would be a moderate reduction in noise in the park. The most positive effects would be attributed to the reduction of vehicles along the Zion-Mt. Carmel Highway and the reduction in visitor numbers from the lodge to the Temple of Sinawava.

Range of Visitor Experiences and Activities

Analysis. Like in all of the action alternatives, the new management zones in alternative B would help maintain a range of visitor experiences, from solitude and natural soundscapes to more social and developed experiences. However, alternative B would provide fewer opportunities for visitors to see parts of the park than the other alternatives.

Like the preferred alternative, under alternative B, most of the park would be in pristine zones. Visitors would have opportunities for high-quality wilderness experiences, and most visitors who were permitted to go into these areas would have a positive experience.

As in all of the alternatives, most visitors would continue to spend their time in the park's frontcountry, staying in or near the developed areas. The future carrying capacity studies and river management plan may propose limits on use of some areas. It is not possible here to evaluate the effect of these potential actions — they would be assessed if and when the actions are proposed.

Several actions under alternative B would reduce visitor use and significantly alter the recreational opportunities provided in the upper part of the main Zion Canyon. Specifi-

cally, closing Zion Lodge to general public use, removing all food service in the canyon, eliminating the horseback riding operation on the Sand Bench trail, and reducing the number and frequency of shuttles going to the Temple of Sinawava would have a major, negative effect on use of the park (see below).

Acquiring access easements would have the same effects as those described under the preferred alternative. These easements would ensure that visitors could continue to access several popular trails and routes that currently go through private land. Thus, this action would have a major, positive impact on visitors using those routes.

Kolob Canyons Road — Under alternative B, park managers may add a few new visitor developments at the entrance area and provide additional interpretive facilities along the road, which would have a minor, positive effect on the visitor experience. However, removing the parking area at the South Fork of Taylor Creek would have a moderate, negative impact on visitors, because it would eliminate the opportunity for people to stop and view this area and would displace visitors who hiked here.

Although use levels in much of the Kolob Canyons area would decrease under this alternative, it is likely that use would still increase along this road because of restrictions in the rest of the park and because this road would be one of the few that visitors could still drive on in their own vehicles. If visitation to the Kolob Canyons area increased or if visitors stayed longer in this area, crowding and noise levels associated with visitation could increase (e.g., voices, car noises). The degradation of park resources also may occur, such as increased litter and erosion, and the formation of more social trails. These changes would have a minor to moderate, negative impact on those visitors who valued natural soundscapes,

solitude, and viewing park resources in a natural state.

If visitation increased substantially, park managers may place limits on the number of vehicles allowed on the road or institute a shuttle system. This could inconvenience visitors, limiting when visitors could access the road in their vehicles. However, visitors would be assured of a more rural experience and crowding and noise would be moderated.

Kolob-Terrace Road and Lava Point

Under this alternative, several trailheads and parking areas would be removed (e.g., Hop Valley, the Right Fork, Wildcat Canyon, Connector trail) along the Kolob-Terrace Road. This action would have a minor to moderate, negative impact on some visitors' experiences because it would reduce their hiking opportunities and reduce opportunities to have contact with park resources.

Visitors would no longer be able to drive past the Lava Point entrance area, near the ranger residence. As a result, visitors would have to walk about a mile to reach the West Rim trail. This would have a minor to moderate, negative impact on visitors who enjoyed accessing Zion's resources in their vehicles, slightly reducing their opportunities to enjoy Zion's resources. For other visitors, adding one mile onto the length of the trail could add to their enjoyment. However, it is likely that this action would have a negligible impact on the experiences of trail users.

Due to restrictions in other parts of the park, the Kolob-Terrace Road would be one of two major roads visitors could still use to drive into the park. Consequently, visitation could increase here over time.

If visitation to the Kolob-Terrace Road and Lava Point area increased or if visitors stayed longer, noise levels associated with

visitation could increase (e.g., voices, car noises) and there would be fewer opportunities for visitors to experience solitude. Some degradation of park resources also may occur. This would have a minor, negative impact for those visitors who valued natural soundscapes and solitude and viewing park resources in a natural state. If park managers limited traffic or provided shuttles to Lava Point, these impacts would be reduced or eliminated. Some visitors would be adversely affected if they could not experience the Lava Point area, however.

South Entrance and the Main Zion Canyon

— As noted above, several of the actions under alternative B would have a major, negative effect on recreational use in the main Zion Canyon. Reducing the number and frequency of shuttles running past the lodge would reduce the number of visitors who could experience the last few miles of Zion Canyon, the Temple of Sinawava, and the Narrows. Visitors who were able to get on the shuttles would have opportunities to come into contact with and enjoy some of Zion's most spectacular resources. A number of people also would visit the research/environmental education center and then hike or bike approximately 3 miles to the upper end of the canyon. With less people, noise, and signs of other people, most visitors who went past the former lodge would likely have a positive experience.

The reduction in the number of shuttles going past the former lodge also would have negative impacts. During high use periods, visitors would likely wait in long lines to board the shuttles at the south entrance transportation center, which would detract from their park experience. (A reservation system would reduce the lines but would involve other costs for visitors and park managers.) Visitors with time constraints may forego this experience, just visit the lodge area and nearby trails, or go elsewhere either within or outside of the park. Visitors

returning from the upper canyon to the park entrance probably would have to wait again to board shuttles. Additionally, visitors who took a shuttle to the upper canyon and then went hiking, and visitors who hiked from elsewhere in the park and ended their trips at the Temple of Sinawava, could have to wait to take shuttles back, especially at the end of the day.

Compared to the other alternatives, reducing the number and frequency of shuttles would reduce the number of visitors who hiked the popular trails at the upper end of the canyon, including the East and West Rim trails, Weeping Rock, and the Riverside Walk. This could have a negative or positive effect on the experience of many visitors, depending on how often the shuttles ran.

Under alternative B, visitors would no longer have the opportunity to take concession-operated horseback rides on the Sand Bench trail. This would be a major, adverse impact on visitors who wanted to horseback ride in the canyon. However, it would be a positive impact on visitors who wished to hike the Sand Bench trail without the presence of horses.

Visitors would no longer have the opportunity to stay overnight at the Zion Canyon Lodge. These visitors would need to find lodging outside the park, which would be inconvenient and might reduce the time they spent in the park and the contact they had with park resources. For visitors who valued being able to stay overnight in Zion Canyon but did not wish to camp, this action would have a major, adverse impact on their experience.

Visitors would still experience the former Zion Canyon Lodge as a center of activity because it would function as an environmental education center and the terminus for many shuttles. This would be a moderate to major, positive impact on people

who sought environmental education opportunities. Depending on how park managers operated the center and the shuttle bus stop, noise, crowding, and congestion could increase or decrease in the vicinity of the former lodge.

Because food service would no longer be available in the park, visitors may curtail their stay to dine outside of the park, thus reducing their contact with park resources. Other visitors would simply be inconvenienced. This action would have a moderate, adverse impact on those visitors who wanted to or were expecting to dine in the canyon.

Some visitors and school groups would have increased opportunities to learn about park resources and interact with scientists at the environmental education center. This would allow them to better understand Zion's significance, increase their enjoyment of the park, and increase the protection of park resources. The center would have a positive impact on the experiences of Zion visitors, but the degree of these impacts would depend on how the education center was managed. Criteria such as who could use the center, how long the groups could visit, how many people could participate would all affect visitors' experiences. The extent of these impacts cannot be evaluated at this time.

East Entrance and the Zion-Mt. Carmel Highway — The development of a visitor center near the east entrance would improve orientation and facilitate trip planning for visitors who arrived at Zion National Park from the east. The facilities would provide conveniences for visitors, such as restrooms, a place to obtain backcountry permits, and information about the Zion Canyon shuttle system. Visitors would have additional opportunities to learn about the park's significant resources and primary interpretive themes of Zion before they drove through the park to the south entrance

and transportation center. Better education about resources would lead to increased visitor understanding and enjoyment and better protection of park resources. This action would have a moderate, positive impact on the experiences of visitors who arrived through the east entrance.

Because the area around the east entrance and the Zion-Mt. Carmel Highway itself would be a frontcountry high development zone, visitors potentially would have greater opportunities for and improved access to interpretation, picnicking, hiking, and information about park resources in this area of the park. Increased contact with park resources and additional interpretive opportunities could increase visitor understanding, appreciation, and enjoyment of those resources.

Under alternative B, visitors would be required to take a shuttle along the Zion-Mt. Carmel Highway. This requirement would severely inconvenience park visitors and tourists who used the Zion-Mt. Carmel Highway as a way to get across southwestern Utah. Some people would be deterred from visiting the east side of the park, while others (particularly travelers from points east) might be completely deterred from entering Zion. This would have a major, negative impact on visitors' enjoyment and understanding of Zion's significance.

Visitors who took the shuttle would have a more structured experience with less opportunity for unprogrammed stops to view wildlife, take photographs, or go exploring. This would have a moderate, adverse impact on visitors who valued personal choice and unrestricted access.

Noise levels associated with shuttle buses, parking lots, and people would increase around the east entrance facility and staging area. This would have a moderate, but

localized, adverse impact on the experiences of visitors who valued natural soundscapes.

As noted in the alternative, local residents who traveled through the park for commuting purposes would be considered through traffic and allowed to use the highway. Thus, this alternative should not affect these drivers.

The shuttle system would have some positive effects, as well. Visitors who used the shuttles would experience the road with less traffic and under safer conditions. They would be able to enjoy the scenery without worrying about driving. Because traffic on the Zion-Mt. Carmel Highway would be reduced, visitors hiking in the vicinity would have increased opportunities to enjoy natural soundscapes. In addition, the shuttles would provide a convenient service for visitors who wanted to do one-way hikes to or from the eastern part of the park, or for groups of visitors who wanted to split up. This would have a minor, positive impact on the experiences of visitors who valued quiet and reduced traffic congestion.

Recommended Wilderness — Alternative B would have positive benefits for those visitors who were able to go into the recommended wilderness area. Once visitors entered the recommended wilderness area they would most likely have a quality experience appropriate for a wilderness area (e.g., the experience of natural soundscapes and solitude). Thus, this alternative would result in a positive experience for those visitors who desired a wilderness experience at Zion and were willing to be flexible in their plans.

Like the preferred alternative, the new interim encounter rate limits would likely have a negligible effect on most backcountry users — in most areas people would continue to find opportunities for solitude and natural soundscapes, and the new interim limits would not affect them. In a few

popular areas, such as Taylor Creek, the encounter limits would help ensure that use levels do not increase substantially, thus avoiding potential visitor experience impacts. For those visitors who are seeking a wilderness experience at Zion and were willing and able to be flexible, the encounter limits likely would have a minor to moderate, positive impact, compared to the no-action alternative.

Alternative B would have several negative impacts on visitors. Some visitors may experience a minor to moderate, negative impact if group sizes or encounter rates exceed their wilderness experience expectations. Compared to existing conditions and the other two alternatives, alternative B would provide substantially fewer opportunities for hiking on trails and camping at designated campsites (i.e., primitive zone experiences). Compared to existing conditions, alternative B may result in the reduction of use levels on 17 trails and routes, including several popular trails. Most visitors would no longer have the opportunity to go to certain popular features, trails, and routes, including Observation Point, La Verkin Creek, Hop Valley, Taylor Creek, and upper Emerald Pool, due to these visitation limits. Use of the recommended wilderness area probably would decline by a moderate to major amount, depending on the area and the redistribution of use among trails. Overall, it is likely that the use limits would have a moderate to major, adverse impact on visitors who could not enter the recommended wilderness area and for those visitors who valued the option of choosing where they wanted to go and when. These use limits could also discourage some potential visitors from visiting Zion.

In addition, there probably would be inconveniences for visitors prior to entering the recommended wilderness, such as obtaining permits, making reservations, or potentially

changing the dates or destinations of their trip.

With 94% of the park being in pristine and research natural area zones under alternative B, park managers would prohibit some saddle stock use in areas where this activity is currently permitted. In particular, this alternative would eliminate horseback riding areas along the Hop Valley trail, Scoggins Wash, Dalton Wash/Crater Hill, and upper Coalpits Wash. Some horseback riders would find other areas in the park to ride horses, such as the Coalpits Wash-Chinle loop, while other horseback riders would likely be displaced to areas outside the park. Although a relatively few horseback riders use these areas, the Hop Valley trail is the only area where saddle stock groups can camp in the park. Thus, eliminating horseback use along the Hop Valley trail would have a moderate to major negative impact on those saddle stock groups who use this area.

As noted in the other alternatives, a wilderness management plan would determine if guided activities should be permitted in Zion's backcountry areas. However, under alternative B, areas that could be opened to commercial guiding would be very limited. Thus, the alternative would foreclose some potential new experiences. If guided activities were to be permitted in Zion, the impacts of these activities would be assessed as part of the wilderness management plan.

Research Natural Areas — Under alternative B, approximately 20,348 acres of Zion's recommended wilderness would be research natural area zones and therefore opened only to NPS-guided educational trips and research. Many of these areas currently receive little recreational use. Therefore, managing these areas as research natural areas and restricting public use would have a negligible impact on the experiences of most

visitors. However, a few visitors would be displaced from areas such as lower La Verkin Creek, the Right Fork of North Creek, and Dalton Wash. Some of these visitors would be able to find substitute destinations, but others may not be able to do so. Thus, this alternative would likely have a moderate to major, negative impact on a few visitors who wished to visit these areas.

Scenic Views — Under alternative B, park managers could develop several new facilities that could affect scenic views (e.g., new facilities at the east entrance). Even with appropriate facility design and landscaping to minimize impacts, these developments would have a minor, negative impact on the experiences of visitors who valued a less developed visual scene.

On the other hand, this alternative would require the removal of several facilities, including parking areas along the Kolob Canyons and the Kolob-Terrace Roads, and administrative facilities in Zion Canyon. These actions would allow visitors to experience Zion's scenic resources without the intrusion of these modern facilities, providing a minor, positive impact on the experiences of visitors who valued a visual scene that was less developed in character.

Cumulative Effects. The many management actions proposed under alternative B (e.g., closing trails, eliminating opportunities for horseback riding and staying overnight at the Zion Lodge, reducing in the number and frequency of shuttles going to the Temple of Sinawava, and operating the mandatory Zion-Mt. Carmel Highway shuttles), taken in conjunction with the Zion Canyon shuttles, would limit access to many park resources and create a much more structured visitor experience than the opportunities presently available. In most areas of the park, visitors would have substantially fewer personal choices regarding where they wanted to visit and when. Thus, alternative B has the

potential for a moderate to major, negative cumulative impact on many visitors' experiences at Zion.

Conclusion. For visitors who valued opportunities to experience solitude, quiet, and pristine landscapes, alternative B would have a moderate to major, positive impact. Most visitors who are able to enter the recommended wilderness would have a positive experience. The new education/research center would positively affect the experiences of some visitors and school groups. The mandatory shuttle on the Zion-Mt. Carmel Highway would also have a positive impact for some visitors, reducing traffic and providing an opportunity to hike one-way on trails.

But for many visitors, alternative B would have a moderate to major, negative impact on their experience in much of the park. Compared to all of the other alternatives, fewer visitors would experience Zion Canyon above the Zion Lodge or have the opportunity to stay overnight and ride horses in the park. The reduction in the number and frequency of shuttles going past the Zion Lodge would have a positive effect on visitors who traveled beyond the lodge and a negative effect on visitors who had to wait or were displaced. The mandatory shuttle on the Zion-Mt. Carmel Highway would further reduce personal choices and access to the park's resources. In the recommended wilderness area there may be a reduction in use levels on many popular trails and routes, which would negatively affect visitors wishing to see these areas. New use limits would reduce opportunities for those visitors who wanted to see and experience the Zion backcountry and most of the park's resources.

Taken as a whole, all of the above actions would have a moderate to major, negative impact on visitors in the frontcountry and

moderate, positive and negative impacts on visitors in the backcountry.

Visitor Experiences in Other Nearby Recreational Areas

Although most potential visitors would still be interested in experiencing Zion, alternative B would have the potential to displace many individuals. A few visitors would not go to Zion if they could not stay overnight in the park, could not see the upper end of the main Zion Canyon, or had to take shuttles to see much of the park. Individuals who could not access the Zion backcountry due to limits on visitor numbers, or those who wanted to experience a backcountry with a larger group, also might visit other state and federal recreational areas rather than Zion. The impact of these displaced visitors on other state and federal areas would depend on the specific areas affected, the number of visitors actually displaced, and the times when they were displaced. For most areas, it is likely that increased visitation resulting from the actions in alternative B would have a minor, negative impact on the visitor experiences in those other areas.

Cumulative Effects. Although people would likely be displaced to other recreational areas as a result of the actions taken in alternative B, the operation of the Zion Canyon shuttle system would prevent the overall number of people who were displaced from Zion to other state and federal areas from being too large. Even if many of these potential visitors chose not to go to Zion or chose to shorten their Zion trips, many of the displaced visitors would still be visiting these other recreational areas as part of their "Grand Circle" vacations. Thus, alternative B would have a minor cumulative effect on the experiences of visitors in other recreational areas.

Conclusion. The actions taken under alternative B would likely result in the displacement of visitors from Zion to other nearby state and federal recreational areas. However, the number of displaced visitors would not tend to substantially alter the experiences provided at these other areas. Thus, alternative B would likely have a minor, negative effect on the experiences provided at most nearby recreational areas.

THE SOCIOECONOMIC ENVIRONMENT

Analysis. The conversion of the lodge to an educational facility and the removal of the horseback riding operation and food and gift sales would result in a major, long-term, negative impact on concessioner businesses and their employees within the park. However, some businesses outside the park may actually benefit from the reduction of commercial services within the park because of reduced competition.

A general reduction in visitor use levels could negatively affect some area businesses or individuals from a minor to major degree. Use levels may no longer support some businesses. Conversely, a reduction in visitor numbers in the park would result in less crowded conditions that may entice some visitors to stay longer, which in turn may encourage more spending within the local communities. Fewer visitors who stayed longer (and perhaps spent more) and the lack of competition from businesses located within the park may actually benefit the local gateway economies to a minor to moderate degree. These impacts are likely to be long term in duration. In addition, a few individuals and firms would receive short-term, positive, minor to moderate benefits due to increased opportunities to provide goods and services related to removing, converting, and constructing facilities within the park. These projects would occur at

different times and would be spread throughout the park, which would serve to distribute the overall benefits.

Past increases in visitor use levels and the concurrent demands for goods and services have led the private sector outside of the park to increase development and economic activity. Long-term reductions in visitor use levels would reduce the current rate and intensity of development within the gateway community of Springdale and environs. This development would likely continue at a slower pace and may eventually level off as the long-term, sustainable commercial and residential potential of the area was realized. While the built environment of this area would continue to evolve, the small town "pioneer heritage" image would be fostered and protected by the local land use plan and zoning regulations.

The park would continue to provide the basis for the local tourism industry served by the private sector outside of the park. The effect on the local economy in terms of population, employment, income, and the like, could be either positive or negative. In either case, the effect would likely be negligible to minor due to the relatively large size of the local economy compared to the actions of alternative B.

Cumulative Effects. Zion National Park has been a protected area since 1909. As a result of increased visitation to the park, business and residential development have increased. This growth trend has had a positive impact on the local/regional economy. The actions in alternative B would affect use of the park's backcountry areas, but would not likely diminish the growth trend in the park's frontcountry areas. The operation of the Zion Canyon shuttle system also has resulted in additional NPS expenditures which likely has had a positive, long-term benefit on the local and regional economy. Overall, alternative B would likely have a long-term,

negligible, negative cumulative effect on the local and regional economy.

Conclusion. Reduced visitor use and the removal of commercial activity from within the park would negatively impact some businesses and individuals from a minor to major degree within the gateway communities, especially Springdale. However, the elimination of competition from the park could actually benefit some of these same businesses. So the overall effect (positive or negative) is indeterminate, but probably would be minor to moderate for most affected entities.

Concessioner businesses and their employees would be affected by the loss of their contracts and jobs. These impacts could be moderate to major depending upon the individual situations. In addition, some development projects would provide a few individuals and firms with short-term economic benefits that would be moderate to major (for those directly affected) depending upon the level of involvement that occurred. Thus, while some firms and individuals would experience a moderate to major effect, overall, alternative B would result in a negligible to minor, negative change in the local/regional economy.

CONFLICTS WITH LAND USE PLANS

Analysis. Zion National Park is within the boundaries of Iron, Washington, and Kane Counties. All three counties have a general plan as required by enabling legislation passed by the Utah state legislature and reflected in section 17-27-301 of the Utah code. Portions of the Iron County general plan relating to national park areas focus on Cedar Breaks National Monument, with Zion being mentioned primarily for its impacts related to tourism and recreational opportunities.

The portions of the *Washington County* and *Kane County General Plans* relating to federal government coordination emphasize the mandates of the Bureau of Land Management (BLM) and do not recognize the separate mandates applicable to the U.S. Forest Service or the National Park Service. For example, the *Washington County Plan* provides that this plan is to be used by federal land managing agencies in developing land use plans required by section 202 of the Federal Land Policy and Management Act and 43 CFR, subpart 1601. Similarly, the *Kane County General Plan* recognizes "that federal law mandates multiple use of federally managed land . . ." and cites the Federal Land Policy and Management Act, 43 U.S.C. as the guiding legislation. In both cases, these provisions apply only to BLM and do not apply to either the U.S. Forest Service or the National Park Service, each having its own organic acts and policies for land use planning.

The *Washington County General Plan's* recommendation that park land within Washington County not be managed as wilderness conflicts with NPS policy. According to *NPS Management Policies*, land that has been recommended to Congress as recommended wilderness must be managed in accordance with the provisions of the Wilderness Act.

All three plans emphasize the need for coordination and communication with federal land managing agencies. Many of the concerns that have surfaced have been because of inadequate communication and coordination.

Cumulative Effects. There would be no cumulative effects.

Conclusion. The 1978 wilderness recommendation identified in the *General*

Management Plan would be in conflict with the *Washington County General Plan*.

UNAVOIDABLE ADVERSE EFFECTS OF ALTERNATIVE B

As in the other alternatives, major, localized, adverse impacts on microbiotic soil crusts would continue to occur in areas with extensive development and use. Unavoidable losses of microbiotic crusts also would be likely in areas with new developments, primarily along the east entrance and Zion-Mt. Carmel Highway and the lower Zion Canyon.

With regard to visitor experiences, the elimination of the horseback riding operation in Zion Canyon would be considered by some to be an unavoidable adverse effect. The implementation of a mandatory shuttle on the Zion-Mt. Carmel Highway would have a major, adverse impact on visitor experience by inconveniencing visitors or leading them to decide not visit the park at all. Many would view reducing the number and frequency of the shuttles going up to the Temple of Sinawava as an unavoidable adverse effect that prevented people from seeing and enjoying the upper part of the

main canyon. The termination of lodge operations would have a major, negative impact on visitors who wished to stay overnight in Zion but did not wish to camp.

RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Restoring natural processes along portions of the North Fork of the Virgin River would enhance long-term productivity of the biological resources associated with the river and its floodplain.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES FOR ALTERNATIVE B

Like in the other action alternatives, the loss of soil due to construction of new visitor facilities would be an irreversible commitment of resources. The planning team is not aware of any other irreversible or irretrievable commitments of resources that would occur under alternative B.

CONSULTATION AND COORDINATION



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PUBLIC INVOLVEMENT ON THE FINAL GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

Consultation and coordination among the governmental agencies and the public were vitally important throughout the planning process for the *Final General Management Plan / Environmental Impact Statement*. Interested citizens had several opportunities to share their views and concerns during this process.

The scoping process for this plan was initiated on December 11, 1996, when the *Federal Register* published a "notice of intent" to prepare an environmental impact statement. Subsequent scoping efforts included the distribution of a letter to the public and public agencies soliciting input regarding the issues and concerns the plan should address (see below).

NEWSLETTERS AND WORKBOOKS

The planning team primarily used newsletters and workbooks to involve the public in developing the plan. During the planning process, the team compiled a mailing list consisting of over 1,000 names. The list included members of planning teams from other state and federal governmental agencies (38), state and federal legislators (6), Indian tribal governments (4), local and regional governments (39), businesses and organizations (32), and interested citizens.

During the course of the planning process, the team published and mailed six newsletters and one workbook to the public. The first newsletter was published in October 1996 and was sent to about 850 people and organizations. Newsletter #1 alerted people about the beginning of the planning process and included information on the park's purposes and significance, its mission goal statements, why a new

approach was being taken for this plan, and how the new plan would help the park. In the newsletter, the planning team also asked the public to comment on a vision for the park and on what issues the plan should address.

The planning team received forty-seven responses to the first newsletter. The most frequently expressed vision for Zion's future was for the continued preservation and protection of the park's scenic and natural resources. Another popular vision was for the availability of more recreational opportunities for visitors. The public also identified a variety of issues and concerns on topics such as commercial guided services, congestion, aircraft overflights, development pressures outside the park, and the impacts of increased use.

Based on the responses to the newsletter, the planning team held focus groups to receive public input on aircraft overflights, river recreation, and climbing/canyoneering. Newsletter #2, published in February 1997, announced that focus group meetings would be held in March 1997, and provided an update on the status of the planning effort. This newsletter did not include a response form.

In April 1997, the planning team distributed the third newsletter. Newsletter #3 summarized the public comments received from newsletter #1, as well as the results of the focus group meetings. This newsletter also did not include a response form.

In May 1997, the planning team distributed newsletter #4 to about 900 people and organizations. This newsletter described 7 potential management zones developed by the planning team, identified 6 possible alternative concepts for managing Zion, and discussed 12 major issues and concerns the plan would address. A

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response form asked for comments on the management zones and the alternative concepts.

By the end of the comment period for newsletter #4, the planning team received 26 responses. Most people were supportive of the planning effort to date. Several respondents liked the range of management zones. Almost all of the respondents stated that the range of alternative concepts was appropriate. Again, the respondents expressed a variety of concerns, covering such topics as operating the shuttle system, reducing the numbers of visitors in the park, ensuring the freedom of visitors, and prohibiting some uses.

In October 1997, the planning team published a 16-page alternatives workbook, which was distributed to approximately 1,800 individuals and organizations. The workbook summarized comments received on the May newsletter, described the development of the preliminary alternatives, summarized descriptions of the potential management zones, identified actions that would be common to all of the alternatives, and provided descriptions of six preliminary alternatives for managing Zion. The descriptions of the alternatives highlighted key actions and noted the implications of each alternative.

The workbook included a response form, which asked people to identify their preferred alternative, explain why they prefer the alternative, and make suggestions for improving the alternatives. Another question asked respondents to identify rivers with regionally outstanding natural, cultural, or recreational values. A table in the workbook listed actions that could potentially be implemented in Zion. Respondents identified the actions they would like to see implemented by circling the preferred actions on the table.

About 270 respondents replied to the response form. Most of the respondents did not support any specific alternative as described, but rather suggested revising the alternatives to better reflect their views. People generally preferred an alternative because it protected the park's resources and maintained or increased visitor use. Most of the respondents focused on the actions that would be taken under the alternatives, rather than on how the park would be zoned. Few individuals responded to the question regarding rivers with regionally outstanding values. Those who did respond to this question identified 12 drainages with outstanding values.

In June 1998, the planning team issued a brief update newsletter (#5). The newsletter summarized the comments submitted on the alternatives workbook and identified changes the planning team had made to the management zones and alternatives. Newsletter #5 did not include a response form.

Finally, in December 1998, the planning team distributed another brief newsletter update (#6). This newsletter noted the status of the planning effort and reported that the team had dropped one alternative from consideration. Newsletter #6 also included instructions on how to receive a copy of the draft document, to which the planning team received 212 responses.

PUBLIC AND AGENCY MEETINGS

The planning team held several meetings during the course of the planning process. Two meetings were held with the Springdale Planning Commission; one on November 17, 1998, and the other on June 29, 1999. One meeting was held with the Springdale town council on July 1, 1999. Six briefings were held in St. George with the Southwest Utah Planning Authorities Council (SUPAC), to advise the various land management agencies on the status of the planning effort. These briefings took place: April 9, 1996; August 13, 1996; March 19,

1997; September 2, 1997; January 6, 1998; and September 8, 1999. Similar meetings were held with the Five County Association of Governments, one in Cedar City, on October 8, 1997; one in Panguitch, on May 13, 1998; and one in St. George, on November 18, 1998. Meetings were held on June 15, 1999, in Salt Lake City, with the Natural Resource Coordinating Committee, and on September 1999, with the Utah Rural Summit.

As noted above, the planning team held three focus group meetings to discuss the appropriateness and management of aircraft overflights, river recreation, and climbing/canyoneering. The meetings were held in the park on March 25, 26, and 27, 1997. The planning team also accepted written comments. The April 1997 newsletter (#3) includes a summary of the meetings.

In addition to these meetings, members of the planning team consulted with and

sought the views of several agencies and governments during the planning process. On February 26, 1997, in St. George, representatives of the Kaibab Paiute Indian Tribe, Moapa Indian Tribe, and Paiute Indian Tribe of Utah met with park staff to discuss the plan. The tribes were also updated on the planning effort at a May 14, 1997, meeting in St. George.

In November 1996, the planning team initiated informal consultation with the U.S. Fish and Wildlife Service to determine the presence of federally listed threatened and endangered species in Zion National Park. A copy of the Fish and Wildlife Service response to this consultation is included in appendix G. The planning team subsequently contacted the Fish and Wildlife Service in November 1998, to update this list.

Consultation also was initiated with the Utah state historic preservation officer in February 1999, regarding a determination of effect of the plan on cultural resources.

THE BUREAU OF LAND MANAGEMENT'S LAND USE PLAN AMENDMENT COORDINATION AND CONSULTATION

In February 1998, staff from the Bureau of Land Management's (BLM) Dixie Field Office and Zion National Park entered into a memorandum of understanding concerning wild and scenic studies of five specific tracts of public land on the north border of the park and the inclusion of these tracts into the national wild and scenic rivers system. On April 2, 1998, this memorandum of understanding was amended to include public land encompassing Shunes Creek, a tributary to the East Fork of the Virgin River, contiguous to the southeast border of the park.

On February 17, 1998, a *Federal Register* notice announced the new planning amendment for the Dixie Field Office and solicited public scoping on the preferred alternative. In addition, in February, a BLM news release was sent to newspapers, radio stations, and television stations throughout Utah, Arizona, and Nevada. The St. George Field Office also sent out a "Dixie Dispatch"

in February and September 1998, to the hundreds of agencies, companies, and individuals on the office's planning mailing list. This dispatch was intended to keep the public informed of the planning amendment. The *Proposed Dixie Resource Plan / Final Environmental Impact Statement*, which was released to the public in September 1998, also included a discussion of the planning amendment.

Two meetings took place with the Wild and Scenic River Coordination Group, on March 6 and April 2, 1998, to discuss, among other things, coordination of this planning effort. The coordination group consisted of members of the Utah state government, U.S. Forest Service, National Park Service, Bureau of Land Management, and affected local agencies. The group was formed under a memorandum of understanding to establish a cooperative relationship among the agencies for conducting wild and scenic river studies of Utah rivers.

LIST OF AGENCIES AND ORGANIZATIONS TO WHOM THIS DOCUMENT HAS BEEN SENT

There are approximately 500 entries on the mailing list for this plan. All persons on the list were given an opportunity to review the document. The National Park Service circulated the *Final General Management Plan / Environmental Impact Statement* to the agencies and organizations listed below. Those who responded to the *Draft General Management Plan / Environmental Impact Statement* are noted with an asterisk. A complete list of individuals who received copies of the document is on file at the park headquarters.

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
Dixie National Forest
Kaibab National Forest
Natural Resource Conservation Service
Department of the Interior
Bureau of Land Management
Arizona Strip
Cedar City Field Office
St. George Field Office
Grand Staircase-Escalante National Monument
Kanab Field Office
National Park Service
Arches National Park
Bryce Canyon National Park
Canyonlands National Park
Capitol Reef National Park
Cedar Breaks National Monument
Dinosaur National Monument
Glen Canyon National Recreation Area
Grand Canyon National Park
Mesa Verde National Park
Pipe Spring National Monument
Utah State Coordinator
*U.S. Fish and Wildlife Service

Department of Transportation
Federal Aviation Administration
*U.S. Environmental Protection Agency
Region VIII

Utah Congressional Delegation

Representative Cannon
Rep. James V. Hansen
Sen. Robert F. Bennett
Sen. Orrin G. Hatch

Utah State Agencies

Department of Agriculture
Department of Environmental Quality
Department of Natural Resources
Division of Wildlife Resources
Division of Water Resources
Division of Water Rights
Department of Tourism
Department of Transportation
School Trust Lands Administration
Office of the Governor
Governor Mike Leavitt
*Office of Planning and Budget
State Clearinghouse
*Utah Division of State History
Utah State University
College of Natural Resources
Department of Forest Resources

Utah Legislative Delegation

Rep. Demar "Bud" Bowman
Rep. Bill Hickman
*Rep. Wayne Harper

Other State Agencies

Arizona Office of Tourism
Nevada Office of Tourism

Indian Tribal Governments

Hopi Tribe
Kaibab Paiute Tribe
Moapa Band Paiute Tribe
Paiute Indian Tribe of Utah

Regional, County, Local, and City/Township Governments

City manager, Cedar City, UT
City manager, Mesquite, NV
City of Page, AZ
*Five County Association of Governments
Iron County Commissioners
*Kane County Commissioners
Kane County Office of Tourism
*Kane County Water Conservancy District
Mayor of Alton, UT
Mayor of Brianhead, UT
Mayor of Cedar City, UT
Mayor of Colorado City, AZ
Mayor of Enoch, UT
Mayor of Enterprise, UT
Mayor of Flagstaff, AZ
Mayor of Fredonia, AZ
Mayor of Hildale, UT
Mayor of Hurricane, UT
Mayor of Ivins, UT
*Mayor of Kanab, UT
Mayor of Kanarraville, UT
Mayor of Laverkin, UT
Mayor of Leeds, UT
Mayor of Mesquite, NV
Mayor of New Harmony, UT
Mayor of Orderville, UT
Mayor of Paragonah, UT
Mayor of Panguitch, UT
Mayor of Parowan, UT
*Mayor of Rockville, UT
Mayor of St. George, UT
Mayor of Santa Clara, UT
Mayor of Springdale, UT
*Mayor of Virgin, UT
Mayor of Washington, UT
Mohave County Board of Supervisors, AZ
Springdale Planning Commission
*Washington County Commissioners

*Washington County Water Conservancy District

Organizations and Businesses

*Access Fund
American Rivers
American Saddlehorse Association
Amfac Parks and Resorts
*Back Country Horsemen of Utah
Bike Zion
*Bridgerland Back Country Horsemen
Bryce/Zion Trail Rides
*Canyon Country 4x4 Club
Cliffrose Lodge and Gardens
Defenders of Wildlife
Flannigans Inn & Restaurant
Four Corners School of Outdoor Education
*Friends of Zion
*Grand Canyon Trust
*Grand Canyon Wildlands Council
John Wesley Powell Memorial Museum
Kane County Travel Council
League of Women Voters
National Audubon Society
*National Parks and Conservation Association
National Trust on Historic Preservation
National Wildlife Federation
*Nature Conservancy
Partners in Parks
People for the USA
Salt Lake Convention and Visitors Bureau
St. George Chamber of Commerce
St. George Off Road Association
*Sierra Club
*Southern Utah Wilderness Alliance
Trees Ranch Ltd.
*Utah Heritage Foundation
Utah Native Plant Society
Utah Travel Council
Utah Wilderness Alliance
Utah Wildlife Federation
*Virgin River Runners Coalition
Walapai 4 Wheelers
Washington County Travel and Convention Bureau
Western Environmental Law Center
Wilderness Society

Wilderness Watch
World Wildlife Fund
Zion Canyon Chamber of Commerce
Zion Canyon Cinemax
Zion Lodge
Zion Natural History Association

Local Libraries

State Library (Salt Lake City)
Kanab
Springdale
Hurricane
St. George
Las Vegas
Panguitch
Salt Lake City Public Library (Government Documents)
University of Utah
Utah State University Library
Harold E. Lee Library, Brigham Young University
Southern Utah University Library

Media

AM Park Network
Associated Press
Daily Spectrum
Dixie Datebook
Environmental News Network
Garfield County News
Grand Canyon Report
Las Vegas Review-Journal
MB Broadcasting
Off the Beaten Path
Salt Lake Tribune
Southern Utah Sportsman Magazine
Southwest Utah Magazine
Thompson Newspapers

PUBLIC COMMENTS ON THE DRAFT GENERAL MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT AND RESPONSES

This section addresses the oral and written public comments received on the *Draft Zion General Management Plan / Environmental Impact Statement*. The comment period on the draft plan initially ran from December 6, 1999, through February 11, 2000. A notice of availability of the document was published in the December 6, 1999, *Federal Register*. After several requests were received, the comment period was extended to February 29, 2000. Comments postmarked after February 29 were not accepted.

The National Park Service received over 500 comment letters and numerous verbal comments at public meetings held in Utah. All comments were reviewed and considered by the planning team in preparation of the *Final Environmental Impact Statement*, consistent with the requirements of 40 CFR 1503. The comments allow the planning team, NPS decision-makers, and other interested parties to review and assess the views of other agencies, organizations, and individuals regarding the preferred alternative, the other alternatives, and their potential impacts. *It is important to note that the selection and revision of the preferred alternative is not based solely on how many people support a particular alternative or action.*

The section begins with summaries of the public meetings and written comments. A summary of the major changes made in the preferred alternative is then provided, followed by a clarification of several concerns that were commonly raised in the public comments. Next, comment letters from all federal, state, and local agencies, and private organizations are reproduced and responses are included for all substantive comments. In addition, responses are provided for other agency and organization comments the

planning team believed merited a response (e.g., comments that reflected confusion, misinformation or misperceptions or that were commonly stated).

Where appropriate, the text in the *Final Environmental Impact Statement* has been revised to address the comments. These changes are identified in the NPS responses. No response was given to comments simply expressing preference for an alternative or any actions within the alternatives. All page number citations in the responses refer to the draft document.

As defined in *NPS-12: NEPA Compliance Guideline* (NPS 1982), comments are considered substantive when they:

- (a) question, with reasonable basis, the accuracy of information in the environmental impact statement
- (b) question, with reasonable basis, the adequacy of environmental analysis
- (c) present reasonable alternatives other than those presented in the environmental impact statement
- (d) cause changes or revisions in the proposal

Because of the volume of written comments received, no individuals' comment letters have been printed. However, with one exception, the planning team believes that the agency and organization letters cover all of the substantive comments raised in individuals' letters and oral comments. A substantive comment from one individual is summarized and a response is provided before the comment letters.

SUMMARY OF THE PUBLIC MEETINGS

The Zion planning team held five public meetings on the draft environmental impact statement. The meetings were in Cedar City (January 6, 2000); Springdale (January 10); Kanab (January 11); St. George (January 12) and Salt Lake City (January 13). A total of 200 people attended the public meetings. The largest number of people (63) attended the Springdale meeting, followed by Kanab (55); St. George (53); Cedar City (17); and Salt Lake City (12). At most of the meetings the public was given opportunities to make oral presentations, limited to 3-4 minutes, which were recorded on tape. At two of the meetings there were question and answer periods in which the planning team answered questions from the audience. Participants also could record their comments on flip charts and write comments on a response form. Several organizations were represented at the meetings, including the Virgin River Runners, the Washington County Backcountry Horsemen, People for the USA, the Boy Scouts of America, the Washington County Commissioners, and the mayors of Virgin and Kanab.

Most of the people who spoke at the meetings were concerned with the following major issues in the draft plan:

- the perception that the Park Service was restricting horse use in the park and eventually would be eliminating this use
- setting group sizes in the pristine and primitive zones, which would prevent people from using much of the park
- adding the Rockville Bench to the park, which would eliminate a mountain bike trail
- a lack of coordination with local and county governments in developing the plan

- the economic impact the plan would have on the local communities

Other concerns that were expressed covered a wide range of topics, including the impacts of prescribed burning; ensuring that kayakers and others have access to the river, permitting commercial guiding in the park (some supported this and others opposed it); providing opportunities for more access into the park rather than limiting use; the negative effects of protecting the microbiotic crusts; the effects of the wild and scenic river designations; the effect of the United Nations and IUCN on management of the park; operation of the shuttle system; the need to devote more effort to trail maintenance and to providing new trails so people can disperse into more of the park; and the need to protect the park's soundscape.

Most people who spoke did not say which alternative they favored. However, most people recognized the special qualities of the park and wanted to preserve the area's resources. On the other hand, there was a lot of concern expressed about the limits and restrictions in the preferred alternative and the reasons for these actions. A few people supported the preferred alternative; others supported the no-action or a modified alternative A.

SUMMARY OF WRITTEN RESPONSES

The Zion planning team received 518 separate written responses during the comment period, including written letters, comment forms that were filled out and either mailed or given to park staff, and e-mail comments. Several of the responses were written by the same individual. Of the 518 responses, 33 were from agencies and organizations, including two federal agencies, two state agencies, and nine local and regional governments and agencies. (Two of the responses from local

governments and three of the responses from organizations were form letters noted below.) One response was received from a state representative. The other 485 responses were from private individuals and businesses. Three form letters were received, which accounted for 321 of the individuals' responses.

The majority of the private individual responses came from Utah, with St. George, Kanab, Hurricane, and Springdale accounting for the largest number of responses. Responses were received from individuals in 16 other states, with Nevada accounting for the great majority, followed by Arizona.

The written comments from individuals included a much larger range of opinions than the oral comments. The vast majority of people who wrote responses did not say which alternative they favored. Of those who did, 18 people or organizations favored the preferred alternative, 13 favored alternative B, and two favored alternative A. Several individuals and organizations supported the preferred alternative, and alternative B with changes. One group, Friends of Zion, proposed a brand new alternative.

The three topics/issues individuals and organizations most commonly commented on were:

- restrictions on horse use, including trail closures, and group sizes
- the proposed group size limits in the backcountry (primitive and pristine zones)
- including the Rockville Bench Slick Rock Swamp Trail in the park

Of those who commented on these topics, most people were opposed to these proposed changes. A few commentators supported the proposed restrictions on horse use, the tighter group size limits, and the inclusion of the Rockville Bench into the park.

Other topics/issues that were frequently addressed by the commentators included:

- the perceived closure of the Zion-Mt. Carmel Highway to public use
- whether or not Parunuweap Canyon should be opened up to more public use or designated as a research natural area
- wilderness management and proposed changes to the original wilderness recommendation
- the proposals to add new developments on the east side of the park, Lava Point, and the Kolob Canyons
- perceived restrictions on the rights of adjacent private landowners and inholders in the park
- a lack of opportunities for the public and local governments to participate in the development of the plan
- whether or not to provide additional access into the backcountry
- use of the Zion Lodge
- whether or not to permit commercial guiding in the park

Most of the commentators opposed what they believed to be a closure of the Zion-Mt. Carmel Highway, changes to the original wilderness recommendation, and any actions that would infringe on the rights of landowners. Many people wanted opportunities for more access into the park (e.g., more trails), but others opposed additional access and the proposals for new developments on the east side, Lava Point, and Kolob Canyons. Most people supported the current use of the Zion Lodge, although some urged that it be closed and others that it be partially converted to an environmental education/research facility. Many people were dissatisfied with the planning process and the opportunities they had to participate in the process. Views were split on the future of Parunuweap, with some

supporting the preferred alternative, some arguing for increased access, and some supporting designation of the canyon as a research natural area. Views were also sharply split on whether or not to permit commercial guiding in the park.

Many other issues were raised in the comment letters, including designation and management of the research natural areas; the ban on inner tubing in the park; snowmobile use; opportunities for the disabled and elderly to access the backcountry; the economic impact of the plan on local communities; microbiotic crusts and the need for visitor restrictions; air pollution from controlled burns in the park; recommendations for wild and scenic river designations; concerns regarding restrictions on climbing; the use of science (or lack of science) in the planning process; a lack of rationale in the plan for many of the decisions being proposed; need to provide further attention to noise pollution; air tours and overflights of aircraft; lack of discussion of ecosystem management; and the operation of the shuttles in the main canyon and elsewhere in the park.

MAJOR CHANGES TO THE DRAFT GENERAL MANAGEMENT PLAN

Numerous changes were made to the draft plan based on the comments the planning team received. Listed below are the major changes that were made between the draft and final plans. This list does not include all the changes that were made to clarify points, provide additional rationale for decisions, or correct minor errors or omissions.

- A new section on ecosystem management has been added to the "Park Policies and Practices."
- The pristine zone description has been rewritten to note that routes and paths may be defined and maintained if necessary to

prevent damage to resources. The zone description also now states that saddle stock use would be prohibited.

- The section on wilderness management in "Park Policies and Practices" has been expanded to note the minimum requirements process for wilderness.
- The section on land protection in "Park Policies and Practices" has been expanded to discuss how inholdings are managed in the park.
- The intent of the preferred alternative has been clarified. The emphasis of this alternative is on better resource and visitor management rather than on adding new facilities to the park's infrastructure. New developments would be intended to protect resources, and secondarily to improve the visitor experience.
- The preferred alternative now provides a vision for how the frontcountry and the backcountry areas of the park would be managed.
- The preferred alternative now provides a commitment to complete a wilderness management plan and carrying capacity studies within the next five years.
- The treatment of saddle stock in the three action alternatives has revised. In the primitive zone, the interim saddle stock group size would be a maximum of six saddle stock and six people. The interim encounter rate would be set at no more than one other saddle stock group encountered per day. Overnight camping would be permitted only at the designated site in Hop Valley, with a maximum stay of one night. Within the primitive zone, some designated areas within the park (e.g. Kolob Arch trail and Taylor Creek trail) would continue to be closed to saddle and saddle stock. Off-trail use of saddle stock would be permitted only in

lower Coalpits Wash from the trailhead to the junction with Scoggins Wash, Scoggins Wash, and Huber Wash.

- The preferred alternative now provides an expanded discussion of visitor carrying capacity. It states that the hiker and saddle stock group size and encounter limits in the primitive zone, and hiker group size and encounter rates in the pristine zone are interim limits. The interim hiker group size for the primitive and pristine zones also has been changed to no more than 12 people per group in both zones. (See page 60 for the rationale for this change.)
- Revisions to the 1978 wilderness recommendation that were proposed in the alternatives have been dropped. A few minor changes have been made to the 1978 wilderness recommendation to reflect the acquisition of inholdings and water rights and to more accurately delineate the recommended wilderness boundary.
- The draft plan wilderness maps incorrectly showed the southwest area of the park as potential wilderness. The 1978 recommendation to Congress depicted this area as nonwilderness. The wilderness map in the final plan accurately identifies the wilderness boundary consistent with the 1978 wilderness recommendation.
- In the three action alternatives, the parking area at Dalton Wash would be removed because it falls within the recommended wilderness area.
- In the preferred alternative, three areas designated as transition zones — the Timber Creek overlook, the Narrows from Mystery Canyon to the north of Orderville Canyon, and the Observation Point trail — lie within the recommended wilderness area. The revised preferred alternative states that management in these areas would be consistent with wilderness, although use levels would be permitted to be higher than in other zones in the wilderness area (i.e., primitive and pristine zones). Also, overnight camping would not be permitted in the transition zone.
- Additional text has been included that provides the rationale for deauthorizing the existing research natural areas and for designating new research natural areas.
- A new appendix has been added that identifies the resource attributes of the new research natural areas.
- Parunuweap and upper Shunes Creek above the diversion would be designated as a research natural area in the preferred alternative. Authorized NPS-led educational groups may be permitted in this and other research natural areas.
- In the preferred alternative Huber Wash has been rezoned as a primitive zone.
- The Shunes Creek and Camp Creek administrative zones in the alternative maps are now shown in the zones they would be in if and when the National Park Service acquires the water rights to these areas. This is consistent with how the inholdings are treated in the maps.
- Building a full-service visitor center inside the park on the east side is no longer included in the preferred alternative. Instead, the preferred alternative states that the Park Service would work with adjacent landowners, Kane County, or other organizations to locate a space outside the park to provide park orientation and information to visitors.
- The options of building new short nature trails along the Zion-Mt. Carmel highway, expanding the campground and picnic areas at Lava Point, and building a new water treatment plant inside the park have

been dropped in the preferred alternative. The text now states that no new trails would be built along the Zion-Mt. Carmel highway. Also, no additional visitor developments would be provided along the Kolob Scenic Drive.

- The relative capital costs/construction costs for the preferred alternative have been reduced based on the above changes.
- The bibliography has been expanded to include sources that were used during the planning process, or provide support for the actions being taken in the plan.

CLARIFICATIONS OF COMMONLY RAISED PUBLIC CONCERNS

Several views on the draft plan were commonly stated in the public comments, which reflected inaccurate information, misperceptions, or confusion. This section clarifies what the draft plan did and did not state.

Concern 1: The *General Management Plan* is proposing to restrict local residents' use of the Zion-Mt. Carmel Highway.

None of the alternatives in the draft document proposed this action. The National Park Service recognizes the importance of this road for visitors, through-traffic, and businesses, and under all of the alternatives local residents would continue to be able to use the road like they do today. The preferred alternative recommends consideration be given to operating a voluntary shuttle for visitors serving the east side of the park, but this would not affect through-traffic or use by local residents.

Concern 2: The Park Service is proposing to limit access on the Kolob-Terrace Road.

None of the alternatives in the draft document proposed this action. Portions of the Kolob-Terrace Road are a county road, which the National Park Service has limited authority to manage. Under all alternatives local residents would continue to be able to drive the road like they do today. The preferred alternative notes that if visitor numbers increase in the future, action may be needed to ensure that a rural setting is maintained, such as offering a shuttle to transport visitors. But this would not affect through-traffic or use by local residents.

Concern 3: The Park Service is proposing to restrict what adjacent private landowners and inholders can do on their properties.

No such action was proposed in the *Draft General Management Plan*. Instead, the draft plan recognized the importance of maintaining good relations with adjacent landowners and stated that the park staff would keep landowners informed about park management activities (see pages 15-16). The text further stated that park managers would seek voluntary agreements with landowners to encourage their lands be managed in a manner compatible with park purposes. In addition, park staff would seek ways to provide landowners with technical and management assistance to address issues of mutual concern.

With regard to inholders, the draft plan noted that the National Park Service recognizes inholdings are private lands and respects the rights of these landowners (see p.24). The draft also recognizes a desired condition that the inholdings be managed in a manner compatible with the purposes and mission of the park as defined in the 1984 *Land Protection Plan*.

Concern 4: The Park Service is planning to acquire private lands and take them off the tax rolls.

This is not true. The draft plan does not propose the addition of any private adjacent lands to the park (see pages 63-64). The plan does propose a transfer of five contiguous BLM parcels to the park. It also calls for the acquisition of conservation easements and access easements on private lands. But these would be sought only on a willing-seller basis. If the easements are acquired, the lands would continue to be in private ownership and on the tax rolls.

Concern 5: Private inholdings are being proposed for wilderness designation.

No private inholdings are in the recommended wilderness area. However, these lands are identified as potential wilderness in the 1978 wilderness recommendation to Congress, which recognizes that there are nonconforming uses that preclude them from being designated as wilderness. Only if and when the federal government acquires the inholdings from willing sellers would they become part of the wilderness area.

Concern 6: The Park Service has no right to propose a management zone in the recommended Zion wilderness area — the pristine zone — which is more restrictive than the Wilderness Act.

The Wilderness Act recognizes that wilderness areas may differ in their values and that special provisions may be applied to certain areas. The Act further defines wilderness areas as lands that are "untrammeled by man," that retain the "primeval character and influence," where the imprint of man's work are "substantially unnoticeable," and have "outstanding opportunities for solitude or a primitive and unconfined type of recreation." The pristine zone is consistent with this definition. The zone will help ensure that there continue to be areas in Zion where one can have the feeling of being entirely alone in Zion's remote and isolated wildlands. Although the Wilderness

Act does not specify appropriate group sizes and encounter limits, which the zone does, these actions are taken in wilderness areas throughout the country to ensure that wilderness values are protected. Finally, the NPS *Management Policies* provides that "...restrictions may be imposed on any authorized activities in the interest of preserving wilderness character and resources...."

Concern 7: The Park Service has decided to prohibit commercially guided use in the park, or it has decided to permit commercially guided use.

No such decisions were made in the draft plan. As noted on pages 13-14, there are many questions and concerns regarding whether or not to permit commercial guiding in Zion. This is an issue that will be addressed in future implementation plans (i.e., the wilderness management plan). The draft plan did state that NPS-sanctioned guided interpreted trips may be permitted in Parunuweap Canyon, which may have generated some confusion. However, the preferred alternative in the *Final Environmental Impact Statement* has eliminated this language.

Concern 8: The Park Service is prohibiting inner tubing in the park for no apparent reason.

The draft plan did not specifically mention inner tubing because a decision had already been made by the park staff to ban this use on the North Fork of the Virgin River (although tubing still occurs south of the park on the North Fork). This decision was made in response to the dramatic increase in the use of commercial tubing and the resulting negative impacts to the stream bank and bed, aquatic/fish habitat resources, and visitor experience. Visitor safety concerns were also a consideration.

Concern 9: The Park Service is discriminating against bicycling by not providing opportunities for people to bicycle in the park.

The *General Management Plan* would not change where bicycling is currently permitted. The plan states that bicycling would continue to be permitted on roads and designated trails in the frontcountry high development and low development zones. However, bicycling is prohibited in most of the park because it is not permitted in designated or recommended wilderness areas. In other areas, bicycling is prohibited due to the potential for conflicts with other users and because of safety concerns. The transportation system that began operation in May 2000 provides increased opportunities for bicycling in an environment that is much safer and conducive to family riding. The shuttle vehicles are also equipped with bicycle racks to facilitate bicycle use in the main canyon.

Concern 10: The plan would severely restrict use of the park for no apparent reasons.

Much of the park would be zoned pristine and primitive under the preferred alternative. However, visitors would continue to have opportunities to enjoy Zion's backcountry, subject to limitations imposed by the park's rugged terrain (which concentrates use on certain trails and routes), NPS wilderness policies, and the zone prescriptions (which are intended to protect park resources and ensure high quality visitor experiences).

The group size limits in the primitive and pristine zones, which were changed in the final plan, would not affect most groups. In both zones the current backcountry group size limit of 12, which has been in place since about 1982, would continue as an *interim* limit until the wilderness management plan and carrying capacity studies are completed. While a substantial body of scientific literature exists

regarding the effects of group size on resources and visitor experiences (see Manning (1999) and Hammit and Cole (1998)), information specific to Zion is limited. Information collected during the development of the wilderness management plan and carrying capacity studies should assist park managers in setting appropriate group size limits for the primitive and pristine zones. It may be necessary to impose stricter group size limits than the current limit in order to meet the desired future conditions for the two zones as described in this plan.

With regard to visitor encounters, the continued growth in backcountry use requires some proactive action now to ensure that resource integrity and the quality of visitor experiences are maintained. Limiting group encounters is one way to ensure that that desired conditions for the primitive and pristine zones are met. The encounter limits proposed in the plan are within the range of other wilderness areas across the country. Like the group size limits, the encounter rates are labeled as interim limits because additional research, specific to Zion, is needed to determine if these limits are sufficient for protecting resources and ensuring quality visitor experiences in the primitive and pristine zones. The future wilderness management plan would reexamine the encounter rates and modify them if appropriate.

It should be noted that prior to the completion of the wilderness management plan, park managers may institute other interim group sizes or encounter rates in specific areas to address resource damage or visitor safety concerns. Also, use limits have been established and enforced for several years in parts of the park, such as in the Narrows, the Left Fork of North Creek, and the West Rim trail.

Concern 11: The Park Service is prohibiting or substantially reducing horse use in the park.

This is not true. The plan recognizes that saddle stock use is a traditional activity and specifies that saddle stock use would continue to be permitted as it is now on designated trails and at designated times. Zion National Park has had use limits regarding horseback riding for many years. Saddle stock use has been limited to avoid impacts to sensitive natural and cultural resources and to other visitors. The preferred alternative would make only minor changes to where saddle stock are permitted in the park. In the upper Coalpits and Dalton Wash/Crater Hill areas, where trails are being restored to natural conditions, off-trail saddle stock use would not be allowed. However, these areas receive very little saddle stock use. Most saddle stock groups stay on park trails and would not be affected by this action. Although off-trail use would be limited in two areas (upper Coalpits and Dalton Wash/Crater Hill) the preferred alternative would not affect the vast majority of horse use in the park.

Concern 12: Designating research natural areas will prevent the public from visiting these areas.

Research natural areas (RNAs) are areas administratively designated by federal land management agencies for research and educational purposes. Research natural areas typically preserve examples of ecological communities that have been little disturbed in the past, and in which current natural processes are allowed to continue with minimal human intervention. Uses in research natural areas are restricted to research, education, and other activities that do not detract from the area's research values.

Under NPS guidelines, any potentially disruptive recreational activities, including hiking, are not permitted in research natural

areas because of the likelihood of impacts on research efforts. However, authorized NPS led educational groups may be permitted into some of these areas, so long as they do not harm the integrity of the site in any way or interfere with scientific studies.

Concern 13: The Park Service is using an inappropriate administrative procedure to propose boundary changes to a wilderness recommendation.

There are specific legislative procedural requirements that must be met to revise a wilderness recommendation that has been sent to Congress. These requirements have not been met by this general management planning process. Thus, the draft plan incorrectly proposed several modifications to the 1978 wilderness recommendation. This error has been corrected in the *Final General Management Plan*: none of the current alternatives are proposing changes to the 1978 wilderness recommendation boundary, except for a few minor adjustments that reflect the acquisition of several inholdings, and state surface, mineral, grazing, and water rights.

Concern 14: The National Park Service manages their lands, resources, and visitors differently and more restrictively than other agencies such as the Bureau of Land Management or the U.S. Forest Service.

The most important general direction for NPS management is provided by the interrelated provisions of the NPS Organic Act of 1916 and the General Authorities Act of 1970 (including amendments to the latter law enacted in 1978). These acts establish a mandate to conserve park resources and values (see the full description of the Organic Act in the appendix).

In contrast, other federal land management agencies, such as the Bureau of Land Management (BLM) and the U.S. Forest

Service (USFS), are managed under different legislation specific to their agency's mission. Multiple use mandates are carried out for the BLM under the Federal Land Policy and Management Act (FLPMA) and the USFS under the National Forest Management Act, as amended.

Each agency has its own unique purposes and values and their differing legislation and mandates serve to manage these resources and values accordingly.

RESPONSES TO INDIVIDUALS' SUBSTANTIVE COMMENTS

There was one substantive comment from an individual that was not covered in the above

responses or in the responses to concerns at the beginning of this part. Vic Vierra stated that the planning team failed to assess the impacts of the alternatives on overall research values and monitoring values. He thought this needed to be added as a new impact topic in the environmental impact statement. The document was revised to include this as an impact topic considered but not analyzed in detail because all of the alternatives would promote the protection and restoration of resources and ecological processes within the park and related landscape. Establishing research natural areas would particularly provide for areas with high value for baseline inventory and long-term ecological observation. Consequently, there would be no adverse impacts on research values.

COMMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8

555 16th STREET - SUITE 800
DENVER, CO 80202-2498
http://www.epa.gov/region8

February 29, 2000

Don J. A. Fahy, Superintendent
Zion National Park
Tropicale, UT 84767-1099

VIA FAX AND MAIL

Subject: Comments in the Draft General Management Plan/Environmental Impact Statement (Visitor Management and Resource Protection Plan) (DGEIS)

Dear Mr. Fahy:

EPA appreciates the opportunity to submit its comments on the above referenced project. Section 309 of the Clean Air Act (CAA) directs EPA to review and publicly comment on environmental impacts of a major federal action. In addition, EPA is directed to determine whether environmental impacts associated with the action are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA's review of this DGEIS is LO (Lack of Objectives). Lack of Objectives - The review has not identified potential environmental impacts requiring substantive changes to the preferred alternative.

EPA believes that the National Park Service (NPS) has provided a preferred alternative that offers several opportunities for park resource preservation and an increase in protection of the park's environmental resources. In relation to the current plan, the proposed plan offers several improvements:

- Further limitation of backcountry group size in primitive areas and primitive areas.
- Place limitations on total number of parties allowed in the primitive and primitive areas.
- Reduction of visitor numbers on trails and routes.
- Increase the proposed park acres of wilderness.
- Recommend five drainages and their tributaries as eligible and suitable for addition to the national wild and scenic river system.
- Include some BLM lands for transfer to park.
- Sections of North Fork of the Virgin River restored.

EPA has contacted Park officials about the status of instream flows. The Park believes that the current water agreement provides the basis for meeting instream flows. EPA suggests that the final EIS provide more detailed explanation about the instream flows, so the general public can understand the basis for this belief about instream flow sufficiency.

IF NPS has any questions or needs clarification on our comments, please contact Jim Beckley at (303) 312-7182.

Sincerely,

Cynthia Coyle, *plaid*
NPSA Unit
Ecosystems Protection Program



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RESPONSES

Environmental Protection Agency

1. Further explanation about instream flows has been added to the background information for "Park Policies and Practices - Water Quantity and Quality."

Federal Agencies

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COMMENTS

RESPONSES



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
LINCOLN PLAZA
101 EAST 100 SOUTH, SUITE 404
SALT LAKE CITY, UTAH 84111



To: Scott G. Galt
(COOKS/NEUT)

February 7, 2000

Memorandum

To: Superintendent, Zion National Park, Springdale, Utah 84767-1099
From: Utah Field Supervisor, Utah Field Office, Fish and Wildlife Service, Salt Lake City, Utah
Subject: General Management Plan/Environmental Impact Statement (Visitor Management and Resource Protection Plan)

This responds to your letter regarding the subject project. We have no comments on the project, as proposed. Should project plans change or if additional information becomes available we may choose to provide comments in the future.

We appreciate the opportunity to review your project. Should you have any questions or need any further information please contact Scott Galt, Fish and Wildlife Biologist at (801)524-5009 ext. 134.

Scott Galt



Fish and Wildlife Service

CONSULTATION AND COORDINATION

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COMMENTS

RESPONSES



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
LINTON B. BLAIR
141 EAST 1000 SOUTH, SUITE 400
SALT LAKE CITY, UTAH 84119



Re Reply Date To
(COKS/NEUT)

December 22, 1999

RECEIVED

JAN 3 2000

Memorandum

DSC-PM

To: Project Manager, National Park Service, Denver Service Center, 12795 West
Alameda Parkway, P.O. Box 25287, Denver, Colorado

From:  Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, Salt
Lake City, Utah

Subject: Biological assessment and determination of no effect or not likely to adversely
affect federally listed species, Zion National Park, General Management Plan

The U.S. Fish and Wildlife Service (Service) has reviewed the General Management Plan (GMP) and Environmental Impact Statement (EIS) for Zion National Park, received by our office on November 22, 1999. These documents were submitted to our office as a biological assessment with a request for concurrence.

The proposed action in the plan the National Park Service will implement for Zion National Park over the next 15 to 20 years. Under this alternative, park managers would proactively address impacts resulting from increased levels of visitor use. Management zones would be established in the park to ensure that resources were protected and opportunities were provided for a range of quality visitor experiences. Increases in overall park visitation would continue, however, limits may be placed on trail use levels. Small visitor facilities such as picnic sites, rest rooms, and short nature trails could be built to accommodate visitors. Part of the North Fork of the Virgin River would be restored to a more natural condition.

The Service concurs with your determination of "no effect" for the desert tortoise, bald eagle, and Utah prairie dog and your determination of "not likely to adversely affect" the Mexican spotted owl. Please note that the peregrine falcon was removed from the federal list of threatened and endangered species per Final Rule of August 25, 1999 (64 FR 46542).

- 1 We are unable to concur with your determination of "no effect" for the southwestern willow flycatcher. The EIS indicates that the only confirmed sighting of a willow flycatcher in the park was in 1994 along the East Fork of the Virgin River. Please update this information to include a singing bird that was located in the Birch Creek survey area in June 1999 (survey information provided by Ms. Mary Hunsutt, Division of Resource Management and Research, Zion National Park).

1. The determination for the southwestern willow flycatcher has been revised to may affect, not likely to adversely affect. The June 1999 flycatcher sighting has also been added to the text.

Federal Agencies

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COMMENTS

RESPONSES

CONSULTATION AND COORDINATION

- 1 The proposed action includes items that could impact riparian areas, including river restoration efforts and increased visitation. Impacts to riparian areas from restoration efforts would likely be short-term with long-term beneficial results. In addition, a river management plan will be developed, as part of the GMP, to address important water resource issues in the park, including visitor uses and the restoration of sections of the North Fork's floodplain. Ongoing efforts by the National Park Service to survey for known willow flycatcher locations should direct management decisions to minimize impacts to flycatcher habitat.

In a phone conversation on December 21, 1999 between Ms. Laura Romin of this office and Ms. Elaine Rideout of your office, it was agreed that the determination for southwestern willow flycatcher would be revised to a "may affect, not likely to adversely affect" conclusion in the final GMP and EIS. The Service can concur with this determination as it more accurately reflects that potential impacts may occur, however, with implementation of appropriate management actions, the impacts are not likely to adversely affect the species and may result in long-term beneficial effects.

As you have stated within the draft EIS, Zion National Park is a signatory to the Virgin Spinedace Conservation Agreement and Strategy. This Agreement and Strategy outline specific actions that should lead to the long-term conservation and protection of Virgin spinedace throughout the Virgin River basin.

- 2 We support actions that provide additional conservation and protection of streams inhabited by Virgin spinedace and other native fish fauna. Specifically, we encourage cautious management of activities such as recreational floating (i.e. tubing) that have been correlated with reduced Virgin spinedace densities. We recommend that the EIS include a discussion of Zion management policy for this activity.

Another action that we anticipate will benefit Virgin spinedace is the designation of more manageable Research Natural Areas that include streams identified in the Virgin Spinedace Conservation Agreement. The watershed of Shams Creek is one such example.

- 3 It would be helpful to include a brief discussion in the EIS of how the alternatives demonstrate Zion's participation in the Conservation Agreement and Strategy by providing additional conservation actions or protection for Virgin spinedace.

Thank you for your interest in conserving endangered species. If we can be of further assistance, please contact Laura Romin, Wildlife Biologist, of this office at (801) 524-5001, ext. 142.

DL McSOD

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2/6

COMMENTS



Department of Community and Economic Development
Division of State History
Utah State Historical Society

Michael G. Lewis
Director
Max J. Brown
Director

February 24, 2000

Darla Sidles
National Park Service
Springdale, UT 84767-1099

Dear Ms. Sidles:

The Utah State Historic Preservation Office (SHPO) appreciates the opportunity to comment on Draft General Management Plan/ES for Zion National Park.

It appears all of the alternatives presented in the Plan/ES will either have no effect or no adverse effect on the Park's historic resources. However, we believe the NPS should better address the maintenance and re-use of under utilized in the final Plan/ES.

Deferred maintenance seems to be a problem faced by many parks due to funding restraints. We believe the Plan/ES may be able to address this problem with a variety of different tools or approaches. Last week, when I was visiting Zion Park, I noticed deferred maintenance appears to be a continuing problem in the Birch Creek area. Deferred maintenance may eventually threaten the viability of these historic structures, and would be considered an "adverse effect" under Section 106 of the National Historic Preservation Act.

It is always in the best interest of historic buildings to have a viable use in them. Perhaps, instead of building new structures, the concessionaire should be encouraged or required to reuse the existing historic structures whenever possible. If a current use cannot be found for a historic building, the NPS should spend the minimal amount needed to "mothball" the building in order to prevent further deterioration until a viable use can be found in the future.

In addition, it is important the concessionaires and others who work on the Park's historic resources are cognizant of the requirements of Section 106 in order to allow enough time for consultation and the consideration of alternatives while still meeting their construction deadlines. This would include consultation on proposed changes to work plans, after the initial consultation is completed. In the past, occasionally changes were made after the initial consultation (without further consultation) that could be considered an "adverse effect" rather than a "no adverse effect". Better understanding of the federal requirements by those responsible making changes to these building will help prevent this situation in the future.

Preserving and Sharing Utah's Past for the Present and Future

RESPONSES

State of Utah, Department of Community and Economic Development

- Your comments have provided a number of recommendations for specific actions, such as contractual requirements for concessionaires who use historic resources within the park, and other project-specific preservation issues, such as deferred maintenance and property stewardship at the Birch Creek historic district. These recommendations would be more appropriately addressed within activity level plans (e.g., commercial services plan and resource management plan) that will either be developed or updated after the conceptual framework of the GMP is approved.

In the implementation of undertakings, including those identified in the approved GMP, Zion National Park will continue to comply with all federal mandates, including the National Historic Preservation Act, as amended, and NPS policies, to protect and preserve historic properties. All work, whether conducted by the NPS or concessionaires, will continue to comply with the *Secretary of the Interior's Standards and Guidelines*. Every effort will be made to lessen effects to historic properties to the maximum extent possible, through Section 106 consultation with the Utah SHPO. As required by NPS mandates and policies, Zion National Park managers will continue to manage the park's cultural resources, including archeological sites and historic resources, for the benefit of future generations.

With regard to cumulative impacts, we believe that none of the actions being proposed in the plan would result in cumulative impacts to the park's historic districts, based on the implementation of the actions listed in the draft document on page 141.

State Agencies

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COMMENTS

RESPONSES

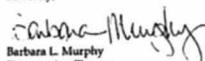
CONSULTATION AND COORDINATION

- 1 Finally, because the historic resources in Zion National Park are located within historic districts, the Plan/EIS should address what effect cumulative changes within these districts will have. Small changes, considered individually may have no effect or no adverse effect. However, cumulatively, these changes may have an adverse effect. The most effective way of addressing this type of cumulative change is through the planning process.

We congratulate Zion National Park on its many successful historic preservation projects. We look forward to continuing our partnership with the Park to ensure its cultural resources are preserved for this and future generations of Park visitors.

If you have any questions or concerns, please feel free to contact me at (801) 533-3563 or by email at bmurphy@history.state.ut.us

Sincerely,



Barbara L. Murphy
Preservation Planner
State Historic Preservation Office

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COMMENTS



State of Utah

GOVERNOR'S OFFICE OF PLANNING AND BUDGET

Resource Development Coordinating Committee

Michael D. Smith
Governor
Brad T. Harber
State Planning Coordinator
James L. Erickson
Executive Director
John A. Hays
Executive Director

1400 State Capitol Building
Salt Lake City, Utah 84114
801-538-1557
Fax: 801-538-1567



February 29, 2000

Darla Sidler
Zion National Park
Springdale, Utah 84767-1099

SUBJECT: Draft General Management Plan/EIS
State Identification Number: UT991121-030

Dear Ms. Sidler:

The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. The Division of Water Rights comments:

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1 In the section titled, *Water Supply and Conservation Strategies* (page 49), it is stated that the National Park Service will study water supply and treatment alternatives. We request the inclusion of language stating that any alternative methods adopted will conform to the 1996 Zion National Park Reserved Water Rights Settlement Agreement.

2 In the section titled, *Proposed Wilderness* (page 58), it is stated that 94% of the park area will be proposed for wilderness designation. We request additional language stating those water rights accrued to such a congressional designation remain covered by the previously mentioned agreement.

3 As part of the section titled, *Proposals for Wild, Scenic, and Recreational River Designation* (page 66), it is stated "that five park rivers and their tributaries would be suitable for inclusion in the National Wild & Scenic River System. We request additional language stating those water rights accrued to such an inclusion remain covered by the previously mentioned agreement."

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address or call Carolyn Wright at (801) 538-1535 or John Hays at (801) 538-1559.

Sincerely,

Brad T. Harber
Brad T. Harber
State Planning Coordinator

DTD/ur

RESPONSES

State of Utah, Governor's Office of Planning and Budget

1. The preferred alternative has been revised to state that any changes in the water supply system would be consistent with the Zion National Park Water Rights Settlement Agreement. Also see Washington County response 12.
2. The draft plan incorrectly proposed several modifications to the 1978 wilderness recommendation. There are specific legislative procedural requirements that must be met to revise a wilderness recommendation that has been sent to Congress. These requirements have not been met by this general management planning process. Consequently, the final plan has been revised to reflect the 1978 wilderness recommendation. And although the Park Service supports recognition of the Zion National Park Water Rights Settlement Agreement under any congressional wilderness designation, the Park Service cannot dictate future congressional actions. It would be at the discretion of Congress as to whether to include such language in any future wilderness legislation.
3. Such a statement, which is included in appendix F, has also been added to the preferred alternative text under "Proposals for Wild, Scenic, and Recreational River Designation."

State Agencies

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RESPONSES

Representative Wayne A. Harris



33RD DISTRICT
JOSEF LANGE, CLERK
 2000 WASHINGTON DRIVE
 WEST BOSTON, OHIO 44190
 2000 WASHINGTON DRIVE
 WEST BOSTON, OHIO 44190

본문에서 인용한 문헌은, 출판사명, 저자명, 연도, 제목, 출판지, 판권사항, 그리고 인용문 자체의 위치(문단, 문장)를 밝히는 것 이외에, 다른 특별한 정보를 포함하지 않는다.

February 23, 2000

Ms. Darla Sadles
Park Planning Coordinator
Zion National Park
Springdale, UT 84767-1099

RE: PLEASE ENTER THESE COMMENTS INTO THE OFFICIAL RECORD FOR THE
ZION NATIONAL PARK PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Saffers,

Because of the lack of coordination with communities and local government¹, and the lack of unbiased scientific studies and statistical analyses on economic ramifications of the Proposed Action in the plan, the National Park Service should adopt a No Action Alternative until adequate study and local involvement is done to properly guide management for the next 20 years.

One major concern I have with the proposed plan is its further restriction of main areas for visitation. Since only 1% of visitation occurs in the back country, expanding wilderness areas merely concentrates the vast majority of visitation in the most at-risk areas. Under the proposed plan, 99% of visitation will occur on a mere 14% of park lands. These restrictions merely increase overcrowding problems in the most-used parts of the park.

I am also concerned about new restrictions proposed in the plan regarding horseback riding. The proposed plan would restrict horses to a few trails that are also used by hikers. Presently, however, there are no restrictions as to where a person can ride horseback. Since National Park studies have shown that horses do not cause environmental damage except when concentrated, what grounds are there for concentrating and restricting such a popular use of the park?

State of Utah, House of Representatives, Rep. Wayne Harper

1. The preferred alternative is not proposing major changes to where visitation occurs in the park. The 1978 wilderness recommendation to Congress has a major influence on the type of visitor use allowed in Zion's backcountry. About 90% of the park is in this category and, according to NPS Management Policies, must be managed as if it were designated wilderness. Most people who come to Zion want to visit the frontcountry areas, primarily the main Zion Canyon, but also Zion-Mt. Carmel Highway, the Kolob Canyons area, and the Kolob-Terrace Road. Improvements, such as the new transportation system, will permit the Park Service to accommodate large numbers of visitors, providing a quality experience in the frontcountry areas of the park. See also "Clarification of Commonly Raised Public Concerns," concern 10.
2. Zion National Park has had use limits regarding the use of saddle stock for many years. Saddle stock use has been limited to avoid impacts to sensitive natural and cultural resources and to other visitors. In the recommended wilderness area saddle stock have been confined to designated trails, with a few exceptions (e.g., Huber Wash and lower Coalpits). In the preferred alternative saddle stock could still use designated trails, as well as Huber Wash, Scoggins Wash, and lower Coalpits. Since most saddle stock use is along established trails, the preferred alternative will not affect the vast majority of horse use in the park. See also "Clarification of Commonly Raised Public Concerns," concern 11.

CONSULTATION AND COORDINATION

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COMMENTS

2/23/00, page 2

- 3 Many Utahns who love the park have expressed concerns over the attitude of the plan toward private property in and around the park. Why is it that the proposed plan calls for the acquisition of more land, which is being used mainly for recreation or agriculture, when the Park Service claims to be short on funds to manage the land they already have? Before more land is acquired, a serious study of the need and ability to manage this land must be conducted.

There are many unanswered questions that should be answered before the National Park Service adopts any plan that will guide use of the park for the next 20 years. As I have mentioned above, the main questions concern local involvement in the development of the plan, and adequate study of the types of uses that will best preserve the park for future generations. Therefore, the National Park Service should adopt a No Action Alternative until these questions are answered. Thank you for your time, and your attention to this matter. If you have any questions for me, or if you would like to discuss this issue further, feel free to contact me.

Sincerely,



Rep. Wayne Harper
43rd District, House of Representatives

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RESPONSES

3. The plan does not call for the acquisition of private lands. It does propose that the Park Service acquire conservation easements and access easements on private lands outside the park on a willing-seller basis, or encourage local governmental entities or nonprofit groups to acquire these easements. The Park Service believes that the access easements are necessary to ensure visitor and park personnel access to relatively inaccessible parts of the park, and that the conservation easements are needed to preclude potential development that would affect the scenic qualities of the park and visitor experience. See also "Clarification of Commonly Raised Public Concerns," concern 4.

State Agencies

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COMMENTS

Five County Association of Governments

160 North 1400 West
St. George, Utah 84778

Fax (435) 473-3548



SOUTHWEST UTAH

Post Office Box 1228
St. George, Utah 84771

Office (435) 473-3548

February 22, 2000 *2118*

Mr. Don Falwey, Superintendent
Zion National Park
Springdale, Utah 84767-1099

re: Five County Association of Governments Comments on the Draft General Management Plan

Dear Don:

I would like to once again thank you for the efforts you and your staff continue to make to keep local governments informed and up to date on management planning for Zion National Park. We sincerely appreciate your presentations and visits.

Here are a set of comments regarding the Draft General Management Plan. We look forward to your response regarding these concerns, and wish to formally request a copy of the proposed General Management Plan when available.

1

1. Page 15 - Relations with Governmental Agencies

We appreciate your commitment to work closely with other governmental agencies; to continue to be an active member of SUPAC, and to coordinate with the Five County AOG. However, we ask that this policy be strengthened by the creation of an Advisory Council which would be composed of representatives from other federal agencies, state agencies, Kane and Washington Counties, Congressmen, and scientists. This Council would be invaluable in assisting in adaptive management activities, and in providing regular advice to park management.

2

2. Page 18 - Air Quality

The strategy to review, comment on and recommend actions to minimize or reduce emissions within 64 miles of Zion is a concern. There is not enough detail on how this strategy would be employed. The Park has no jurisdiction over emissions outside of its boundary, and while the

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WASHINGTON

RESPONSES

Five County Association of Governments

1. Some national park units do have advisory councils but they were established through specific legislation for specific programs. The Organic Act establishing the National Park Service does not provide for advisory councils. This differs from BLM's Federal Land Policy and Management Act, which does provide for their establishment. We are bound by the provisions of the Federal Advisory Committee Act, which requires such advisory groups be legislatively authorized. The park will continue in efforts to meet with all groups having an interest in park management practices.
2. It is the Park Service's responsibility under the Clean Air Act to maintain the park's class I air quality status. We would continue to work with our neighbors in addressing concerns regarding harmful emissions from sources being proposed near the park. The park staff would also provide input as part of the EPA permitting process, through which the park staff reviews proposals for development within 100 km (64 miles) of the park. The permit applicant for a proposed major emitting facility must demonstrate that emissions of particulate matter and sulfur dioxide would not exceed the maximum allowable increase for a class I area.

CONSULTATION AND COORDINATION

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COMMENTS

Fort County Association of Governments Comments
February 22, 2000

- 2 park may comment on activities, it should not assert the ability to veto activities outside of the park.
- 3 3. Page 19 - Night Sky
How does the park propose to work with local communities to protect the night sky? Again, the park should not expect to be able to usurp land use permitting authorities of local governments.
- 4 4. Page 24 - Land Protection
The park has no land use authority on privately owned in-holdings. Any cooperative management agreements should be filed with the affected county, and recorded in the official county records.
- 5 5. Visitor Use Management Strategies
The proposed group size limitations in the various alternatives seem to be quite arbitrary. The analysis needs to be strengthened in regards to why 13 people create an unacceptable impact that 12 do not (or 9, or 12, etc.). There should be some type of variance allowed when it can be demonstrated that no resource impacts will occur.
- 6 6. Boundary Adjustments
The Association of Governments is opposed to the acquisition of the 80 acre Rockville Bench parcel. That parcel is becoming a premiere mountain biking venue which is not creating undue resource impacts, and which can be more effectively managed by BLM.
- 7 7. Zone Boundaries
Many of the zone boundaries appear to be arbitrary setback from roads, waterways, or other linear features. For ease of management and visitor understanding, zone boundaries should be moved to easily recognizable natural features such as cliff lines, etc.

Avoid "cherry stemming" one zone boundary into the surrounding zone. Enlarge the zone to take in more area, and conform to topographic features to create zone boundaries.
- 8 8. Fee Structure
As more and more visitors come to Zion, it is evident that additional financing will be necessary to manage the impacts and natural resources. Many foreign nationals visit the park, and pay the

RESPONSES

3. NPS Management Policies provide for park managers to work with neighboring landowners on topics of mutual interest and to encourage compatible adjacent land uses by actively participating in planning and regulatory processes of neighboring jurisdictions. The park staff has been acting in accordance with these policies by working with the town of Springdale and their planning commission on such matters as the zoning ordinance for signs and the street lighting for streetscape improvements and shuttle stops for the new transportation system. Our approach is not to "usurp the land use permitting authorities of local governments", but rather to be a constructive, cooperative partner in helping to achieve mutually agreed upon goals.
4. Land protection planning and land acquisition are subject to all applicable legislation, congressional guidelines, executive orders, and departmental and NPS policies and guidelines. These include the NPS "Land Acquisition Policy Implementation Guideline," the Department of Interior's "Policy for the Federal Portion of the Land and Water Conservation Fund," NPS "Land Protection Plan Instructions," the Uniform Relocation and Assistance and Real Property Acquisition Policies Act, and Executive Order 12630 ("Governmental Actions and Interference with Constitutionally Protected Property Rights"). As such the privately owned inholdings within the boundaries of the park are managed in accordance with our 1984 "Land Protection Plan."
5. The hiker group size limits in the primitive and pristine zones have changed in the final plan. In both zones the current backcountry group size limit of 12, which has been in place since about 1982, would continue as an interim limit until the wilderness management plan and carrying capacity studies are completed. While a substantial body of scientific literature exists regarding the effects of group size on resources and visitor experiences (see Manning (1999) and Hammit and Cole (1998)), information specific to Zion is limited. Information collected during the development of the wilderness management plan and carrying capacity studies should assist park managers in setting appropriate group size limits for the primitive and pristine zones. It may be necessary to impose stricter group size limits than the current limit in order to meet the desired future conditions for the two zones as described in this plan.

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COMMENTS

For County Administration of Governmental Comments
February 25, 2000

- 8 same fees as tarping American citizens. Zion should request authorization to amend its fee structure to allow a high entrance fee for visitors from outside the country.

9 9. East Mesa and East Rim Trails

These trails should be removed from any wilderness or primitive designation. This will allow for mechanized use of the trails by bicycles, wheel chairs, or other means not allowed in a wilderness designation. This opportunity should be left available for some of the high elevation lands on the east side, just as it is on the west (Kolob Canyon, Kolob Terrace, Zion Canyon)

I hope these comments are helpful as you complete the General Management Plan. Please let me know whether you need any clarifications or explanations.

Sincerely,



John S. Williams
Executive Director

cc: Steering Committee

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RESPONSES

With regard to guided backcountry use, as noted on page 13 of the draft, this is an issue in which there are sharply differing views. This issue would be addressed in the future wilderness management plan and carrying capacity studies.

6. The trail in this area was constructed without consultation with the BLM or the town of Rockville and requires trespassing on private property to access it. It is our understanding that some limited, unauthorized use still occurs. The acquisition of the 311-acre parcel of BLM land on the Rockville Bench was included in the preferred alternative after its addition was requested by the town of Rockville.
7. The boundaries of the zones conform to natural features in most cases, although in some areas, as along roads and trails, the zone width is defined as a specified distance from the centerline. The scale of the maps in the document prevent the zone boundaries from being more clearly portrayed. With regard to cherry-stemming zones, we have tried to avoid this when possible.
8. Entrance fees for national parks are established in conformance with legislative requirements. Adjusting the fee structures to provide an increased fee for non-citizens would require congressional authorization.
9. The draft plan incorrectly proposed several modifications to the 1978 wilderness recommendation. See "Clarification of Commonly Raised Public Concerns," Concern 13. This error has been corrected in the final plan. All of the alternatives now are consistent with the 1978 wilderness recommendation, which included the East Mesa and East Rim trails in recommended wilderness.

CONSULTATION AND COORDINATION

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COMMENTS



Kane County Commission

Phone - 435-644-2551
Fax - 435-644-2052
76 North Main
Kanab, UT 84741

2/29/00

Don Falvey
Superintendent
Zion National Park
Springdale, UT 84767-1099

Re: Kane County Board of Commissioners comments to the Draft General Management Plan

Dear Mr. Falvey

1

While a relatively small portion of Zion National Park, is in Kane County the impacts of a new General Plan on the communities and people of our County are enormous. Travel into and out of the Park through the eastern entrance is of critical importance to our tourism economy and the well being of people and important businesses along Highway 89 and State Route 9. We therefore must ask that you and your staff keep a close eye on Zion National Park programs that could degrade travel and circulation patterns for visitors and residents of Kane County to the Park. We will take whatever actions are available to the County in order to resist and oppose any efforts to limit or close access to the Zion National Park on State Route 9 for any period of time.

We also recommend that local traffic and circulation be provided for by establishing alternative routes around Zion National Park over roads such as the Coral Pink Sand Dunes road south to the Arizona Strip. Such routes would help to relieve Park congestion for fewer numbers of people during critical times of the year. This would benefit Kane County residents by providing the means to avoid traffic tie ups in the Park in the heavily used summer months.

Zion National Park is a magnet for visitors to other attractions near our communities. Large numbers of people visit Zion with plans to see the North Rim of the Grand Canyon and Bryce Canyon along with other points of interest such as the Coral Pink Sand Dunes. A major change in NPS policy and programs can and has affected the economies of nearby communities in Southern Utah and Northern Arizona. We must be vigilant and careful about the winds of change that often blow in from places far away with values and perceptions that ignore rural people and their communities. The people of Kane County respect and love Zion National Park. We have a close cultural history of being the Park's

RESPONSES

Kane County Commission

1. There are no actions in any of the alternatives that would affect through-traffic or use by local residents of State Route 9, the Zion-Mt. Carmel Highway. Visitors may eventually have the option of taking a shuttle to the east side of the park. But there are no actions in the preferred alternative that would prevent visitors from driving on State Route 9 into and out of the park. See also "Clarification of Commonly Raised Public Concerns," concern 1.

Local Government

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COMMENTS

neighbor long before it became the Mukuntuweap National Monument in 1909, and later Zion National Monument in 1918 at the end of World War I. After the completion of the tunnel and road construction on Zion's east side the Park rapidly became a major factor to the communities of Mt Carmel, Orderville, Glendale and Kanab, Utah.

2. As the main canyons in Zion continue to attract large numbers of visitors with resulting pressures of how to handle and accommodate these people it is counter intuitive to us to note management programs in the Draft General Plan that limit visitation and experiences to the Park's back country features. The group size restrictions on numbers ranging from 5 to 12 including horses should be re-thought and examined. Professionally guided backcountry experiences could be of real value in getting more visitors off of the main canyons and out into the Park under closely controlled circumstances. This would also provide for additional local opportunities for family owned guides and outfitting businesses to benefit from this approach. This would go a long way to helping to balance uses and reduce conflicts between hiking and horse uses of the outback Park areas. Tubing has evolved into another major use of the river in the Park and is another example of allowing people use in areas that reduce the crowding in the main portions of the Park. Why not layback and float the Virgin River through Zion National Park?

4. We are greatly troubled by the new proposed designations of wilderness, primitive and pristine in the Park that are by design intended to keep the American people out of the Park except in a few heavily impacted areas with metropolitan style commuter busses as the preferred mode of transportation. National Park designation on its own merit should equate to standards sufficient for resource protection while allowing the opportunity for people to enjoy all of the features and benefits of an area as grand as Zion National Park. We oppose designations of Wilderness and Pristine to any area in the Park. The very nature and character of features of the Park on their own are enough to convey the impact on beauty and primitive conditions.

5. Critical habitats and watersheds in the Park have been allowed to change and depart from natural conditions due to the lack of disturbance cycles. Areas that were once short grass habitats are now over stocked with woody plants, shrubs and trees. The intentional re-introduction of fire in the Park since the early 1900's has resulted in conditions that are too young utilizing the natural function of critical ecosystems. This has large effects both up stream and down stream from Zion National Park in air and water resources of the area. We feel that a very aggressive program of restoration projects, mechanical and natural must be instituted in order for Zion National Park to do its share in assuring the quality of naturally functioning ecosystems in and on the edge of the Park environs. Passive vegetative management programs are insufficient for maintaining needed and required conditions for bio-diversity. Fire must be re-introduced to the Park, both natural and prescribed.

RESPONSES

2. The hiker group size limits in the primitive and pristine zones have changed in the final plan. In both zones the current backcountry group size limit of 12, which has been in place since about 1982, would continue as an interim limit until the wilderness management plan and carrying capacity studies are completed. While a substantial body of scientific literature exists regarding the effects of group size on resources and visitor experiences (see Manning (1999) and Hammit and Cole (1998)), information specific to Zion is limited. Information collected during development of the wilderness management plan and carrying capacity studies should assist park managers in setting appropriate group size limits for the primitive and pristine zones. It may be necessary to impose stricter group size limits than the current limit in order to meet the desired future conditions for the two zones as described in this plan.

The final plan continues to call for the establishment of encounter rate limits for hikers in the primitive and pristine zones. The continued growth in backcountry use requires some proactive action now to ensure that resource integrity and the quality of visitor experiences are maintained. Limiting group encounters is one way to ensure that that desired conditions for the primitive and pristine zones are met. The encounter limits proposed in the plan are within the range of encounter rates set in other wilderness areas across the country. Like the group size limits, the encounter rates are labeled as interim limits because additional research, specific to Zion, is needed to determine if these limits are sufficient for protecting resources and ensuring quality visitor experiences in the primitive and pristine zones. The future wilderness management plan and carrying capacity studies would reexamine the encounter rates and modify them if appropriate.

It should be noted that prior to the completion of the wilderness management plan and carrying capacity studies, park managers may institute other interim group sizes or encounter rates in specific areas to address resource damage or visitor safety concerns.

With regard to saddle stock group sizes, the limits have changed in the final plan. See response #16 to Washington County and page 60 in the final plan.

With regard to guided backcountry use, as noted on page 13 of the draft, this is an issue in which there are sharply differing views. This issue would

COMMENTS

Finally, we will comment on water resources for both in Park purposes and outside Park purposes. The issue of water law and rights in Utah are of prime concern to people and communities that border the Zion National Park up stream and downstream. We take our guidance from State law and very seriously follow that guidance. Water development for our communities is of critical importance in the uplands from the Park. We will as needs dictate, plan to utilize our rights to that water. Until more is known from surveys and studies of water transmission to and through Zion we are not inclined to limit water development up stream from Zion on the basis of unsupported speculation. We feel a great deal more is needed in science based peer reviewed research prior to any concessions that effect the people of Kane County.

Thank you for the opportunity to comment on the Draft General Plan for Zion National Park. We stand ready to assist in any manner necessary to assure a working plan with local input in deriving a plan for the resources in Zion National Park that enhances visitation and the experience of being in one America's national treasures.

Sincerely,

Kane County Board of Commissioners

Norman Carroll
Norman Carroll
Chairman

cc: Commission
Mayors
Alton
Glendale
Orderville
Kanab
Fredonia
Colorado City
Hildale
Southern Utah News
Spectrum

RESPONSES

be addressed in the future wilderness management plan and carrying capacity studies.

3. Tubing in the park would continue to be banned based on resource and visitor experience impacts. See "Clarification of Commonly Raised Public Concerns," concern 8.
4. It is not the intent of the plan to keep people out of the park, but rather to provide opportunities for people to enjoy the park and its resources without degrading these resources. The new transportation system, for example, will help to accommodate large numbers of visitors, proving a quality experience in the frontcountry areas of the park.

The 1978 wilderness recommendation to Congress also has a major influence on the type of visitation allowed in Zion's backcountry. About 90% of the park is in this category and, according to NPS *Management Policies*, must be managed as if it were designated wilderness. Access to the backcountry will continue to be primarily along existing trails, most of which are in the primitive zone. A large part of the park is zoned pristine, but it should be noted that zone includes much of the park that is not accessible due to steep topography. The plan allows use patterns much as they currently exist but with adjustments as needed to protect the resources. The current use levels in the Narrows and the Subway are examples of some of the adjustments we will have to consider as visitor numbers in the backcountry continue to grow. See also "Clarification of Commonly Raised Public Concerns," concern 6 and response 21 to Washington County.

5. Fire is a natural occurring process in Zion. We believe prescribed burns are important to continue, both to replicate natural ecological conditions and to avoid damage from wildfires.

Local Government

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COMMENTS

Kane County Water Conservancy
District

P.O. Box 122, 981 S. Vermillion Dr.
Kanab, UT 84741

29 February 2000

Uarla Sidles
Zion National Park
Springdale, UT 84767-1099

Dear Ms. Sidles:

Thank you for the opportunity to receive and comment on the draft plan for management direction in Zion National Park. In general, the plan is easy to follow and read, and it is well written.

Of course the Kane County Water Conservancy District is concerned about water issues. We are very concerned about maintaining and securing water rights for property owners and resource users in Kane County. We are also concerned that we have the opportunity to develop needed quantities and in assuring water quality is preserved or enhanced to meet our needs. Most of the private lands, except minor parcels which were mining claims, were patented from home steads because of their associated water.

The draft plan mentions, in several places, the 1996 Zion National Park Water Rights Settlement Agreement, made between the park, the State of Utah, and the water conservancy districts in both Kane and Washington counties. Kane County is very concerned that Zion NP stays within the terms of this agreement and that no new water appropriations be considered even if visitation and growth exceed expectations. Water needs should be met by non-federal appropriations.

It appears that the plan and the intent of the park is consistent with the agreement mentioned, therefore most water related issues are understood and the Kane County Water Conservancy District is satisfied with the direction of the plan.

- 1 We are, however, very concerned with the proposed wild and scenic river selections. It is inconsistent with the Wild and Scenic Rivers Act to propose inclusion of rivers or river beds which have had such modifications and which are as exposed to visitors and vehicle traffic as are some stretches of the Virgin River and its tributaries. This is particularly true inside the park in the main part of the canyon.

Specifically, the North Fork of the Virgin River below the Temple of Sinawava has been channelized along much of the banks by gabion

RESPONSES

Kane County Water Conservancy District

1. To be eligible for designation, a river must be free-flowing and contain at least one outstandingly remarkable value. Free-flowing should not be confused with naturally flowing (i.e., flowing without any man-made manipulation). The existence of low dams, diversions, or other minor structures does not necessarily render a river segment non-eligible, provided that the river remains generally natural and riverine in appearance. The degree of shoreline development or accessibility is not a factor in determining whether a river segment is eligible for inclusion in the national system, although it would affect the classification proposed for the segment.

Modification of the Clear Creek channel and bridge crossings do not affect the waterways eligibility as a recreational river. The classification for Pine Creek has been revised to recreational, downstream from where Pine Creek intersects the lowest switchback (below the Zion-Mt. Carmel Highway tunnel), to the confluence of the North Fork of the Virgin River. This revision was made due to the fact that this segment of the creek has two bridge crossings and the road parallels the creek.

CONSULTATION AND COORDINATION

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COMMENTS

RESPONSES

baskets and earthen levees, it is paralleled by a highway, it has several parking lots, bridges, a diversion, and man made rock walls and rip-rap. The plan itself identifies this segment of the Virgin River as having had major modifications for the protection of the road and visitor facilities, and yet it is still proposed for classification as a recreational river segment.

The Wild and Scenic Rivers Act states that a river worthy of inclusion into the National Wild and Scenic Rivers System would be, "existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway" (section 16(b) WSA Act). The North Fork of the Virgin River below the "Temple", as stated earlier, has had more major modifications than any stream segment in the park (and many other places). It is not consistent with the Wild and Scenic Rivers Act to suggest that this particular segment be included in the National Wild and Scenic Rivers System.

Fine Creek and Clear Creek, tributaries of the North Fork of Virgin River are also segments which have been modified, and are now proposed by in the draft plan as worthy of inclusion into the Wild and Scenic Rivers System.

Fine Creek, proposed as a Wild River, is crossed by two bridges and has a highway adjacent to it. A Wild River normally is free of impoundments, generally inaccessible except by trail, has essentially primitive watersheds or shorelines, and unpolluted waters.

Clear Creek, proposed in the draft plan as a Recreational River, has had the channel modified to protect the adjacent highway, it has rock walls acting as rip-rap, and is crossed by two bridges.

Certainly the modifications to these waterways have not created an eye-sore condition which distracts from the aesthetics, but they have been modified. If the Park Service feels some special protection is warranted, perhaps protection for cultural or historical sites would be more appropriate for the bridges, walls, roads, trails, and other structures than trying to convince congress that the stream beds are in a largely natural and free flowing condition.

The Kane County Water Conservancy District realizes that all of the park and its rivers are very beautiful and that many people come to Zion to enjoy recreation in a natural setting. However, the people do not necessarily come to see the Virgin River, even though the river helped form the park. The visitors come to see the lofty, rocky peaks with inspiring grandeur together with all the natural resources which combine to create Zion's wonderful scenery.

It would be unwise to include such heavily modified waterways in the system because it would create an unnatural ideal for future comparison of wild and scenic rivers analysis. The Park Service, as a federal agency must recognize the burden it may place on itself and other federal agencies if such modified segments were included in the National Wild and Scenic Rivers System. States and local water users would probably carry the most heavy burden, as river segments

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Local Government

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COMMENTS

RESPONSES

CONSULTATION AND COORDINATION

practically anywhere would be under fire, even though the rivers have diversions, and major modifications. There must be a more responsible approach to Zion National Park's proposal for suitable segments for inclusion.

Thank you again for this opportunity to comment and have input. Please see that the Kane County Water Conservancy District remains on your mailing list and that we receive notice of any actions concerning your management plan.

Sincerely,

Mike Noel
for Mike Noel, Executive Director
Kane County Water Conservancy District

cc US Representative James Hansen
Utah Representative Tom Hatch

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COMMENTS

RESPONSES



WASHINGTON COUNTY
197 East Tabernacle • St. George, Utah 84770
Telephone: (435) 634-5700 • FAX: (435) 634-5753

February 28, 2000

COMMISSION
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Mrs. Darla Sidles, Park Planning Coordinator
Zion National Park
Springdale, Utah 84767-1099

Dear Ms. Sidles:

Attached you will find comments from the Washington County Commission relative to the Draft Management Plan for Zion National Park. We would like to have had more time to study the Plan document and become more familiar with it. However, in the time allowed we have invited a number of our staff members and associates to spend time in reviewing the plan and submitting their comments to us.

We have compiled these comments, together with our own, and attached them to this letter of transmittal. We would hope that they will be given careful consideration by the National Park Services, and the planning team, prior to any final draft document being released.

Your acceptance and consideration of these comments is appreciated.

Sincerely,


Gayle M. Aldred, Chairman
Washington County Commission

GMA:jw

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Local Government

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COMMENTS

RESPONSES

CONSULTATION AND COORDINATION

WASHINGTON COUNTY COMMENTS
RELATIVE TO THE
GENERAL MANAGEMENT PLAN /
ENVIRONMENTAL IMPACT STATEMENT
(VISITOR MANAGEMENT AND RESOURCE PROTECTION PLAN)
ZION NATIONAL PARK, UTAH

Submitted By
WASHINGTON COUNTY, UTAH

February 2000

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COMMENTS

WASHINGTON COUNTY COMMENTS RELATIVE TO THE
DRAFT
GENERAL MANAGEMENT PLAN /
ENVIRONMENTAL IMPACT STATEMENT
(VISITOR MANAGEMENT AND RESOURCE PROTECTION PLAN)

ZION NATIONAL PARK, UTAH

Washington County has completed a review of the Draft General Management Plan and Environmental Impact Statement for Zion National Park, located in Washington County, Utah. It is obvious that a lot of effort has gone into the plan preparation. While the majority of the Park has been managed as a wilderness area since its beginning, the proposed management plan apparently has done little to change that practice, except in some areas to make access more difficult than was previously encountered by visitors to the Park.

The following pages contain comments from Washington County relative to the proposed Plan for your consideration in adopting a final management plan for the Park:

1. While the County has maintained a good relationship over the years with the current, and past Park Superintendents, and hopes to maintain such a relationship in the future, we are somewhat concerned that the planning team, who according to the draft plan, met with such agencies as the Springdale Planning Commission, the Springdale Town Council, Several Indian tribes, the Five County organization, SUPAC, various "focus groups" whoever that might have been, and others, yet no direct contact was ever made by the planning team with the Washington County Planning Department, Planning Commission, or County Commission to discuss the plan as it proceeded through the planning process.

Washington County surrounds the Park on three sides. Was any consideration given to future growth or development in Washington County as it might affect the Park, except for the impacts on the Town of Springdale? Did the planning team ever review any of the goals, policies, or guidelines of the Washington County General Plan? Or, did they ever obtain a copy prior to the completion of the draft document?

The lack of coordination and involvement between Washington County, the one entity most directly affected by the management plan, and the planning team, is of considerable concern to the County. We were apparently given the same opportunity for involvement as a citizen living in, say, New York City. Even though the plan states several times that coordination was done with local governments by the planning team, we are concerned as to who "local governments" mean inasmuch as Washington County was left out as far as any direct consultation by the planning team was concerned.

2. While we have several specific comments relative to the Plan, the most obvious comment relates to the overall negative tone of the plan. What comes across to one reading the plan is a feeling that Zion Park would be a great place, if only we could figure out how to keep people out of it. Masking is written into the plan as the enemy, and the effort of the plan is directed toward

RESPONSES

Washington County

1. During the preparation of the plan, we relied quite heavily on the series of newsletters to provide detailed information about the plan and to seek input. Numerous updates were held with a variety of organizations including Southwest Utah Planning Authorities Council (SUPAC) and the Five County Association of Governments, both groups having a Washington County Commissioner attending. The superintendent also met with the Washington County Planning Commission and with Commissioners Eardley and Gardner to discuss the plan near the end of the public review process.

We have reviewed the County General Plan and have discussed the provisions pertaining to the park with Planning Director John Willie. The County General Plan notes that it is important that there continue to be close coordination between the federal and state agencies and Washington County officials in order to protect much of the character and culture and the economic base of the county that has made it an attractive place to live and do business. We certainly agree with that statement and will commit to improving our cooperative efforts.

2. See response 4 to Kane County Commission and "Clarification of Commonly Raised Public Concerns," concern 10.

Local Government

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COMMENTS

2. how to keep people out of most of the park, or how to best minimize their entrance into it

It is interesting to note that the Park was created in 1909, and that "white man pioneers" inhabited the area for forty to fifty years prior to that date. The Park contains 148,016 acres of land of which 113,659 acres, or 76.78 percent of the total park area is being proposed for classification as "Pristine." This would seem to indicate that man is not quite as destructive toward nature as the plan would imply, having been in the area for nearly 150 years, and still having nearly 80% of the Park area as pristine. Therefore, is it really necessary to restrict the use of the park as significantly as is being proposed? If it has remained in a pristine condition for 150 years, how can it be expected to be so greatly degraded in the next fifteen to twenty years, the remainder of the plan?

The Park is required to protect the environment, but it is also there to provide a variety of opportunities for the enjoyment and enlightenment of the public. (Quote from page 7) All, except for 3,175 acres (2%), is proposed for wilderness, which allows access only to those able to hike, climb, backpack, or in some instances, ride horses and, all of which constitutes a very small percentage of the total visitation to the Park. In addition, much of the two percent is found in roadways. Is it any wonder that the small area remaining for the use of the vast majority of the public could expect to see a minor degree of degradation? It would seem that the solution to over crowding in the Zion Canyon area around the Lodge is to provide for more visitor experiences in other areas of the Park where those who are not able to hike or backpack, may also have the opportunity to enjoy the National Park experience. Is the Park for the benefits of the many, or just for the few. When people travel around the world to see Zion National Park, and are then restricted to 3,175 acres, including roadways, is that truly visiting Zion? We think not!

PRIMARY PLANNING ISSUES AND CONCERNS

3. 1. **Increasing Visitor Use** - The County would prefer to see increasing visitor facilities and access to less used areas of the park as the preferred method of handling increased use as opposed to limiting the use of the Park even further. To protect back country wilderness areas, it may possibly become necessary to limit the number of groups in an area at any one time. This would be preferable to limiting the size of groups through an arbitrary size limit. Group sizes vary and it is difficult to tell some of a group, "Sorry, only five of you can go." If there needs to be a limit, limit the number, not the size.
2. **Research and Natural Areas** - Research and natural areas may be necessary as a part of the Park management. The County would support the 5,168 acres recommended by the proposed plan, and the educational use of these areas as well as using them for scientific purposes. The County would not support the approximately 40,000 acres suggested by this section.

RESPONSES

3. Most of Zion National Park is recommended wilderness, which under NPS policies does not provide for development of visitor facilities. We do not believe the preferred alternative would affect access to most of the park. Indeed, we are trying to maintain access to the park by seeking easements across private lands to trailheads. With regard to your concerns on group size limits, see response 2 to the Kane County Commission.

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3. **Public use of Parunuweap Canyon** - The County would strongly encourage the Park to allow the public into the canyon. If there need to be restrictions, that is much better than the no access that has been in effect. Parunuweap Canyon has been a popular venue in the Park for decades. The use of this area by the public needs to continue.

4. **Future of Zion Canyon Lodge** - The County strongly supports the proposed action relative to the Zion Canyon Lodge in maintaining the lodge and making it available for public use.

4 5. **Wild and Scenic River Designation** - If we recall correctly, a memorandum of understanding was signed by all of the Federal Agencies involved in the Southern Utah Planning Council, in which it was agreed that no wild and scenic river recommendations or designations would be made on a "local" level, but rather, that any study that would be done was to be done on a regional basis. Even though there were representatives of the BLM and Forest Service involved in the current designation, this would not appear to be in harmony with the MOU that was signed some time ago.

5 6. **Management of the North Fork of the Virgin River** - The County would urge extreme caution in any changes proposed for the river segment through the Zion Canyon area. In its current condition, floods have not been uncommon. The County would hate to see the channel changed in any fashion that would cause damage to the area around the lodge, giving rise to a demand that the lodge be removed because of danger of flooding.

With most of the Park being place in wilderness, and such a small area proposed as an area where the public can actually come and see part of Zion, small part that it is, it would seem that safety would be more important than naturalizing this last remaining area where over two million people are expected to come each year to experience Zion. Protect Zion canyon from flood damage.

The proposal to remove the flood control and bank protective structures on 4.5 miles of the Virgin River channel in the vicinity of the Zion Lodge could have significant long term costs and detrimental effects. The Park Service planners would do well to understand why these facilities were found necessary in the first place before they decide to remove them. The statements on page 147, under conclusions, that the no action alternative would have a moderate to major long term adverse effect on the north forks natural river process within the Park is without foundation. Many of these facilities were built in the 1920's and 1930's are natural appearing and at this time do not have a significant effect upon the natural river processes. The effect of removal of these levees and controlled structures on sediment and destruction of stream bank vegetation is grossly understated in the impact section of the plan. It is interesting that the core team did not include a hydrologist, nor did the bibliography refer to any publications which would relate or give information on this subject.

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RESPONSES

4. The National Park Service, the U.S. Forest Service, and the Bureau of Land Management developed criteria to be used in addressing the Wild and Scenic River inventories within the state of Utah. We participated in a state-sponsored Memorandum of Understanding (MOU) to prepare an eligibility assessment of the river systems in the park. This MOU also involved the Conservancy Districts for Washington and Kane Counties. We followed the provisions of this MOU using an interdisciplinary team of subject matter experts acceptable to all parties. We feel we fully complied with this MOU.

5. We share your concerns in using extreme caution in modifying the channel of the Virgin River above the Lodge. It is recognized that any effort to restore the channelized reaches of the North Fork of the Virgin River will have risks and impacts, most notably to existing vegetation, sediment loading, and fish. However, these impacts would be short term and relatively minor when compared to the benefits to riparian vegetation, natural stream function, and much improved native fish habitat once the channel adjusts to the unconfined condition. Although 4.5 miles of river were once channelized, the channelization remains effective for only about 2 miles of river, mostly in the vicinity of the lodge. Levees and other structures between the Temple of Sinawava and Grotto Picnic Area have been rendered ineffective by the river. The short sections of road armoring that remain have provided effective flood protection. Visitor safety will be a primary consideration in planning any restoration along the Virgin River. For the majority of park facilities, the Zion Canyon Scenic Drive has superseded the flood protection function of the levees, because it is now consistently higher and broader than the levees. Because most facilities are concentrated along the eastern edge of the floodplain, they can be protected while the river is allowed to use the remainder of the floodplain.

Impacts of the existing channelization, including no lateral movement of the river channel, entrenchment of the channel, an absence of flooding on the floodplain (even during the 100-year flood in December 1966), and the absence of cottonwood reproduction, would continue under the no action alternative. We believe these impacts warrant the finding of a moderate to major long-term adverse impact.

The concept of river restoration was developed by the park hydrologist in consultation with other hydrologists in the National Park Service and other agencies. The specific approaches to river restoration and possible

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6. **Development and uses adjacent to the Park** - This issue does not appear to be treated particularly well in the proposed alternative. One way to achieve desired goals in this area is to work more closely with whatever local government has jurisdiction over the area in question. There will be some additional development near the Kolob Canyons Freeway exit, which should have minimal impact on the Park itself.

Continued development will take place in the Kolob area where there is significant private land. The greatest impact on the Park from this area will likely be that of access to the area through the Park which requires road maintenance and improvements to be done on a regular basis. The lack of water will be a big restraining factor in development in this area, as will the various development standards that will be imposed on any developer. Communication between the Park management and Washington County is important, particularly as it impacts development in and around the Kolob reservoir area.

7. There is no acknowledgment or indication that the core team recognized the Kolob Terrace road as a Washington County road and provides access not only to the Kolob Terrace area of the Park, but also is a trans-mountain link between Washington and Iron Counties. Park management must acknowledge such uses and not attempt to restrict through vehicle use on this road to areas outside of the Park.

8. **Climbing and Canyoneering** - Climbing and canyoneering are important activities in the Park and should not be eliminated. As population and use increases, it may be necessary to apply guidelines on these uses and their locations. The plan implies that the Park would like to eliminate these uses within the Park. The County opposes such an action.

9. **River Recreation** - According to the report, the north fork has been severely abused in the past. Evidently, those species have managed to survive this use. River recreation on the north fork in Zion Canyon is an important use, as mentioned in the report, and one that should not be abridged. Leave something in the Park that can be seen and enjoyed by people without looking through a glass window.

10. **Natural Sounds, Noise, and Air Tours** - Because of the wilderness designation on the Park, most of the natural sounds in the Park should also be preserved by that same designation. In the Canyon the sound of man may well decrease during peak seasons with the use of the shuttle system. There is going to be noise in this part of the park however, and one should not come to Zion Canyon expecting solitude and natural sounds to predominate. There are too many people in too small of an area for this to happen. Spreading the people out into other areas more would help the situation. The restrictions proposed to be placed on size and numbers of groups using the back country should more than make up in solitude and quiet for any disturbance that may take place in the small front country area.

9. The County, tour groups, and private pilots must be involved in any planning dealing with developing an overflight plan for the Park. Air space is very limited now as to where a small

impacts will receive extensive evaluation over the next two to three years, which will include substantial input from experts in river restoration and other affected resources and public input through NEPA compliance.

6. We fully agree that we need to continue with our efforts in working with local governments having jurisdiction over lands adjacent to the park. We have worked closely with those sharing the park's boundary including the town of Springdale, the town of Rockville, and adjacent private landowners. As noted on pages 15-16 of the draft, we will continue to consult and coordinate with local governments on developments and land uses adjacent to Zion, including the Kolob area.

7. We have worked closely with the county on maintaining our portion of the Kolob-Terrace Road and do recognize the importance of that road in serving the Kolob reservoir area and connecting as part of a larger road system to the north. We have noted in the final plan, in the "Affected Environment" section that the Kolob-Terrace Road outside of the park is a Washington County road and that it is a link between Washington and Iron Counties. There are no actions in any of the alternatives being considered that would restrict vehicle use on this road to areas outside the park.

8. We recognize that climbing and canyoneering are well established and traditional park uses and we have no intent of eliminating these activities. As mentioned in the draft plan, we will be preparing a wilderness management plan and carrying capacity studies to better define our management practices for these activities.

9. With the recent enactment of Public law 16-181 and its title VIII, the National Parks Air Tour Management Act of 2000, we are committed to preparation of an air tour management plan (ATMP) to address the issue of commercial air tours over the park. A public NEPA process will be used to prepare the ATMP so there will be ample opportunity to gain input from all sectors of the air industry — private as well as commercial. We will continue to encourage all aircraft to fly outside the park, especially for those flights where the presence of the park was incidental to the purpose of the flight.

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plane may or may not fly in going cross country. Further restrictions will only increase the problem. Any plan for overflights in the Park must be tempered with flight patterns in the area in general. Local public officials and those most closely affected must be involved in any planning. The Park must not prepare a plan in a vacuum.

Most airplanes flying over Zion are doing so for the purpose of getting from point A to point B. However, with the continued expansion of wilderness study areas, national monuments, national recreation areas, and national parks, it becomes extremely difficult for a pilot to find anywhere in southern Utah or northern Arizona to fly without being in or over some restricted zone. Small planes are limited as to the height at which they can fly. Perhaps the real intent of the environmental community in the great desire for "solitude", is to eventually eliminate air travel completely.

11. **Guide Services** - The County has no strong opinion relative to outside guide services in the Park. If such services would be in the interest of economy of time and manpower within the Park, perhaps such an arrangement could be considered. There are many residents around the Park area that are very familiar with the history of the Park and its other attractions. They could be useful in helping to manage the many Park visitors if a plan for their participation was carefully prepared. Do not categorically eliminate offers for private guide service without a careful study.

10 12. **Air Quality** - This section discusses all of the uses of man that contribute to reduced air quality in the park. For some reason, all discussions of air quality relate only to man made pollutants. The greatest single pollutant to air quality in the entire basin has nothing to do with man's impact on the environment. Wind and the dust that is created by the wind is far and away the single most offense to air quality in the entire region. The wind blows in this country regularly, particularly during the spring and summer months, and reduced visibility because of it is a regular occurrence. If you can determine how to control the elements of nature, the man made pollutants will be mostly negligible to air quality in and around the Park. The days when Mt. Trumbull cannot be seen from Lava Point are the days when the wind is blowing on the desert and the view is obscured by dust.

11 13. **Water Quantity and Quality** - In view of the Park Service statement of its intent to fully comply with the 1996 water rights settlement, it is difficult to interpret the meaning of the statement on page 14 of the draft documents under water quality and quantity which states "that a number of water resources issues exist in Zion including water rights". On page 49, the statement is made that the National Park Service would study water supply and treatment alternatives, including procurement of treated water from Springdale, and construction of a new water treatment plant inside the Park. It should be understood that the water that the water right settlement did not contemplate the Park Service moving water rights outside of the Park which would be necessary under this proposal.

12 It was gratifying to note the acknowledgment of the 1996 Zion National Park Water Rights Settlement Agreement, and that the National Park Service intends to fully comply with this

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10. We agree that wind and dust create degraded visibility and air quality in and around the park and have revised the text accordingly in the final plan. The plan, however, addresses the Park Service's responsibilities under the Clean Air Act to maintain the park's class I air quality status by minimizing the effects of in-park pollution sources, as well as providing input as part of the EPA permitting process to reduce harmful emissions from sources near Zion National Park.

11. We have deleted water rights from the discussion on page 14 of the draft document. However, all water rights issues affecting the park could not be addressed by the 1996 Water Rights Settlement Agreement. Examples include the possible acquisition or transfer of water rights should inholdings within the park be acquired or our administration of privately owned rights within the park.

12. The statement regarding building a new treatment plant inside the park has been deleted from the preferred alternative in the final plan. Any proposals for buying water from an expanded treatment plant in Springdale would be reviewed for technical and economic feasibility and would also have to conform to any requirements defined by the state engineer concerning possible changes in points of diversion or other related water rights matters. One of the alternatives for the park's potable water supply that would be considered involves moving water rights from the current spring diversions to diversions of the same amount of water from the Virgin River, then treating that water at a facility in the Town of Springdale. Though the point of diversion for appropriated water rights held by the park would have to be moved in order to accomplish this, both the point of diversion and place of use would remain within the park. Any such change would be accomplished through established procedures. Diversion from the Virgin River would probably occur at an existing diversion dam currently shared by the park, town of Springdale, and Springdale Consolidated Irrigation Company.

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settlement agreement. Also that the NPS acknowledges Utah State authority to control appropriative rights within the Virgin River drainage.

14. **Night Sky** - Because of the height of the patriarchs of Zion, the amount of light that permeates the Canyon from outside the Park should remain negligible. In the wilderness areas, it would be difficult to see any significant light from surrounding areas. The night sky should remain a high quality without any significant requirements either within or outside the Park.

15. **Cultural Resources** - The County has no additional comments.

PARK POLICIES AND PRACTICES

1. The County supports the strategy of the Park to "Continue to establish and foster partnerships with public and private organizations to achieve the purposes and mission of the Park..... would keep landowners, land managers, local governments, and the public informed..... work closely with local, State, and Federal agencies.....they would also pursue cooperative regional planning whenever possible to integrate the Park into issues of regional concern."

The County is not without the Park, nor the Park without the County. Coordination and cooperation between these entities, and the local people is most important in the success of the Park Management Plan. If local residents feel that they are a participant and have "ownership" in what is decided, they will become the most avid supporters of what happens in the Park. On the other hand, if they feel ignored and left out, they will feel no obligation to support Park management practices, to the detriment of the entire region. Local people and officials must be kept informed and involved.

2. **Natural Resources** - The County has no additional comments.

3. **Air Quality** - Is discussed in #11 of the previous section.

4. **Night Sky** - Is discussed in #13 of the previous section.

5. **Water Quantity and Quality** - This is discussed under # 13 of the previous section.

6. **Natural Sounds** - Is discussed in #10 of the previous section.

7. **Cultural Resources** - The County supports the policy and has no further comment.

13 8. **Land Protection** - The County supports the Park policy. It would appear however, that there has been little effort over the years to actually acquire the inholdings inside the Park. The BLM, for example, makes a rigorous effort to eliminate inholdings in sensitive areas on BLM land and regularly will assist in trading these lands to other locations. The same private holdings that

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13. We are working currently on a major land exchange with private inholders and the BLM. We have consulted with other inholders concerning acquisition but the appraisals we obtained have not met with their desires. Our policy of land acquisition involves a willing seller-willing buyer approach so the financial arrangements have to be satisfactory to the landowner or we cannot make a purchase. We have found the exchange process to be the most satisfactory approach and one that provides the most benefits for the landowner.

The Five County Association of Governments encouraged us to provide a copy of our *Land Protection Plan* to the County Recorder's Office for their use in administration of privately owned lands within the park. We will ensure a copy gets to their office.

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were in the Park thirty or forty years ago are still in the Park. It would seem that the Park expects the landowners to simply donate the land to the Park, if not in fee title, at least in providing no use of the land.

Most of the private land inside the Park cannot be developed because of lack of a culinary water supply which is necessary for any development to take place. For this reason alone, little actual development inside the Park of private lands is expected. The County would encourage a more active effort on the part of the Park to eliminate private land from within the Park.

9. **Visitors Use and Experience** - The County has no additional comment beyond the comments states elsewhere.

10. **Visitor Information and Education** - The County has no further comment beyond the stated Park policy.

11. **Levels and Types of Park Development** - Obviously the County would prefer to see a higher level of development and visitor participation in Zion Park. This would be harmony with the multiple use position of the County relative to public land. Realizing however, that the Park has essentially been managed as wilderness since its existence, we do not expect to see much change in the present policies relative to development. That development be maintained at least at the current level is important in order to give the masses who come to see the Park the opportunity of an in-Park experience as much as possible.

12. **Utilities and Communication Facilities** - The County has no additional comments.

13. **Sustainability** - The County has no further comments.

THE PROPOSED ALTERNATIVE

14. 1. **Usage** - "Unless otherwise stated, all existing use, and facilities would continue to occur in the Park under all of the alternatives." The County supports this statement from page 14 of the preferred alternative section of the report, but it would appear that it would be necessary for the Park Service to adopt the "no action" alternative in order for this to happen.

2. **Zone Allocation and Related Actions** - The County would desire to see more development through the Park, not less. The County is concerned that as many people and users as possible have access to as much of the Park as possible. Do not lock out hikers, backpackers, rock climbers, horseback riders, and where roads are accessible, the common man. Make access to all zones in the Park available under some conditions. Do not make any area of the Park as an area where only Park personnel may go.

15. It is also important that those living near the Park in such areas as Springdale, Rockville,

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14. The statement you are referring to was intended to clearly state that the Park Service would not be changing most of the existing uses and facilities in the park. It does not mean that all existing facilities and uses would continue in all of the alternatives, nor that the no-action alternative would need to be adopted. Under the preferred alternative most existing facilities and uses would continue as they are. Exceptions to this statement (e.g., removal of the Firepit Knoll residence) are noted in the alternative.

15. We are not proposing any changes in local residents ability to drive through the park. See the "Clarifications of Commonly Raised Public Concerns," concern 1.

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Virgin, Orderville, Glendale, and Mt. Carmel, have access through the Park as needed on a regular basis. It would be a significant imposition on those people if they needed to travel by way of Cedar Mountain or Pipe Springs to get from one side to the other. Keep their needs in mind.

- 16 The treatment of horseback riding is especially troublesome. No evidence is cited suggesting that horses in the Park have resulted in resource damage, or even have offended the sensibilities of the wilderness enthusiasts for whom the primitive and pristine zones are apparently reserved. Nevertheless, for horse parties in the primitive zone, the total number of people and horses combined would not exceed eight and no horses would be allowed in 83% of the Park to be zoned "pristine." No recognition is given to the fact that large portions of the pristine zone have traditionally been used by horseback riders. Thus, this element of the Plan would have significant impact on a particular group of users. Indeed, there is no basis to suggest why the Park has selected hikers over horseback riders as the preferred visitor to the pristine areas.

3 **Proposed Boundary Adjustments & Easements** - The County does not oppose the addition of the identified parcels of BLM lands as a part of the National Park. They will remain in their current condition whether Park property, BLM wilderness areas, or no designation at all. The size and remoteness will not change in any event.

The County would not normally support including a part of the Park inside a City limit. However, in the case of the Westside WSA, the County is already on record as suggesting that this land should be part of the Park.

Where the Park can work with adjacent property owners for easements for access or conservation, these may be done with the rights of the private property owner kept foremost in mind. They are not mandatory, but should be by consent only.

4 **Implementation** - The County has no further comments.

IMPACTS OF THE PROPOSED ACTION

- 17 **Land Protection** - Those individuals owning private land within the National Park will be bound by all existing land use ordinances in Washington County. This would not however, preclude some type of development that may not be in complete harmony with the management intent of the Park. The most desirable solution would be to work toward either land exchanges, or simple fee purchase of the land at appraised value. A conservation easement, for all intents and purposes, would be the same as deeding the land to the Park free gratis, and would likely not be acceptable to property owners. Most are not likely to make donations.

- 18 **Visitor Use and Experience** - The "vast majority" of Park visitors may or may not be satisfied with the facilities and services that they are able to access. The vast majority of Park visitors are not in a position to hike, climb, backpack, or ride horseback. Therefore, they have no

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16. The plan recognizes that saddle stock use is a traditional activity and allows saddle stock use to continue to be permitted on designated trails and areas at designated times. The large majority of horse use occurs on designated trails and we do not propose to change this.

We have changed the group size limits in the final plan. The existing groups size limit of six people and six saddle stock would continue as an interim limit in the primitive zone. With regard to horseback use of the pristine zone, we disagree that large portions of this area have traditionally been used by horseback riders. Most of the pristine zones consist of rugged, steep areas that do not lend themselves to safe horseback riding. See also the "Clarification of Commonly Raised Concerns," concern 11, response 2 to Representative Harper, and the responses to the Backcountry Horsemen of Utah.

17. See response 13.

18. See response 3, response 1 to Representative Harper, response 4 to Kane County Commission, and "Clarifications of Commonly Raised Public Concerns," concern 10.

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choice but to be satisfied with the two percent of the Park that they are allowed to visit. Hopefully, they do practice proper citizenship while they are there. Most visitors will support management actions that are aimed at protecting the resource.

The County supports the transportation concept to be used during high visitor periods. Visitor satisfaction with the shuttle system will be of interest to the County and would appreciate being advised of the success of the program during this year.

3. **Visitor Information, Orientation, Interpretation, and Environmental Education** - No additional comments. The County supports the proposed action.

4. **Management of the Proposed Wilderness Area** - While the County does not support the wilderness designation of over 80% of the Park, it is recognized that the Park has been managed as wilderness for many decades and that this is not likely to change. If the private in holdings are acquired by the Park, they, obviously, will be included as wilderness. On the other hand, as long as they are retained under private ownership, they will not be classed as wilderness by the County and will be subject to existing land use ordinances.

19. 5. **Levies and Types of Park Development** - It would appear that the Park has no plan for any significant expansion of facilities to serve the public. It is possible to provide handicapped access to facilities within Zion Canyon, the question is, how does the Park plan to provide handicapped access to any of the back country experiences?

6. **Utilities and Communications Facilities** - The only additional comment to this subject is the problem of electrical transmission lines. Should it be necessary to re-route the electrical transmission line serving the Park, Springdale, and Rockville, there is a proposed wilderness area (Canaan Mountain) abutting the Park on the south. This wilderness area extends well into the State of Arizona. Washington County has attempted unsuccessfully so far to maintain a possible utility corridor along the south side of the Park between the Park and the wilderness area so that a transmission line could be constructed in this area, out of the Park, should it become necessary to do so in the future.

7. **Sustainability** - The County has no additional comments on this subject.

OTHER COMMENTS AND CONSIDERATIONS

Washington County appreciates the opportunity to comment on the Draft Management Plan for Zion National Park. Zion National Park is an important part of this County. In reviewing the Plan there are several things that stand out as areas of concern. Things such as

1. It is important that the NPS continue to maintain the current level of public facilities within the Park. To be able to come to Zion and stay in the Park either at a camping site or in the

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19. The Park Service recognizes its legal obligation to make available opportunities for people with disabilities in all of our programs and activities, including the opportunity to participate in wilderness experiences. Visitors with disabilities are not prohibited from accessing the park's backcountry. Opportunities for access by disabled visitors may be provided into the recommended wilderness area provided that any facilities or modifications of the conditions of the lands do not change the fundamental nature of the wilderness experience or cause undue financial burden on the agency.

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lodge, is very important to visitors. While encouraging facilities to develop in adjacent communities is also important, there is something special about having facilities within the Park.

2. To residents of adjacent communities identified elsewhere in these comments, it is very important to them to be able to travel through the Park in commuting between parts of Kane County and Washington County. Access, though slow at peak seasons, must be maintained.

3. Consider the number of groups in back country areas rather than arbitrary numbers. This change in the Plan will go a long way toward solving many of the complaints that we have heard relative to the Plan.

- 20 4. Make an extra effort to communicate with the neighbors living outside of the Park, including public officials, residents, and user groups. Listening to these groups and individuals is critical to the success of the planning process. Those persons and public entities near the Park feel a form of ownership with the Park. It is important to them and to their communities. Individuals living in Washington County should be listened to and included in the planning process. Once they buy into what the Park is trying to accomplish, they will become the strongest supporters. Leaving local persons and groups out of the discussion process will only alienate them and cause a lack of support of Park policies and objectives. Including them will have the opposite effect of making them part of the team that is responsible for protecting and maintaining the values found there.

The views of those in other parts of the country are important, but the views of those close by are critical to the success of the Plan. People are willing to make change, to respect decisions, and to support them, if they are part of the process, even though they may not individually agree with everything in the Plan, they will understand the need for it and support it.

One good example of this has been the shuttle system. This process has been talked about for years with local residents. Everyone knew that the day was coming and by involving them in the discussions over that period of time, it is safe to say that most local residents have bought into the system and support its use because they have come to understand the need, even though many may still rather be able to drive their own car into the canyon at any time of the year. The same can happen with other proposed changes and restrictions, if those who are most affected know and understand the reasons. That more of this type of effort was not made by the planning team is perhaps the greatest shortcoming of the plan. It is still not too late to make local groups, individuals, and public officials part of the Zion Park team to make Zion National Park the very best place that it can be over the next twenty year period of this plan.

- 21 5. It does not appear that the information provided supports the restrictive zoning of the Park. Aside from the fact that the restrictions in the pristine zone are clearly not called for by the Park's purposes, significance or mission goals, they are also not called for to preserve wilderness characteristics, nor are they sought by the majority of Park visitors.

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20. We agree that it is extremely important to communicate with our neighbors on a regular basis and have routinely involved local groups and individuals in park management practices. For example, we hosted an information/educational meeting concerning prescribed fire and invited local residents from communities in the Zion Canyon area to review what was happening when we conducted a burn in the Lee Valley area. We have met with businesses like the Clear Creek Ranch and the Zion Ponderosa Ranch along the eastern boundary to coordinate visitor use and develop neighborly working arrangements. We meet periodically with the Blue Springs Homeowners Association adjacent to the Lava Point area, and we maintain contact with the Zican development at the east entrance, advising on visitor use and potential development of their facilities including their campgrounds.

We also agree that cooperation among all parties is essential for the success of this plan. We have been listening to user groups, local communities, and individuals as a part of this planning process. For example, we have met with local user groups such as climbers, kayakers, and horse riders, to address their concerns as park users. We also have made changes in the final plan to respond to many of the comments we heard.

As noted on pages 15-16 of the draft plan, the park staff will continue to work with park neighbors in the future to address issues and concerns. We will also seek input of local people and groups as we develop the future implementation plans (e.g., the wilderness management plan and river management plan), which will determine how the desired conditions in the *General Management Plan* will be achieved.

21. We believe the zoning schemes in the alternatives are consistent with the purposes of the park and NPS policy. The zones identify desired conditions, which in turn may or may not require restrictions in visitor use. One of the purposes of the park is to "provide a variety of opportunities and a range of experiences, from solitude to high use..." The pristine zone is at one end of this spectrum. This zone also is consistent with the definition of wilderness in the Wilderness Act, which states that these areas retain their "primeval character and influence" and have "outstanding opportunities for solitude." See also the "Clarifications of Commonly Raised Public Concerns," concerns 6 and 10, and response 4 to the Kane County Commission.

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The restrictions are not called for by the Park's purposes, significance or mission goals. "All of the alternatives and management prescriptions in this Plan should be and are consistent with and support the Park's purposes, significance and mission goals." p. 7. These goals include ensuring that "visitor impacts do not impair resources" and that the resources are maintained "at healthy and viable levels consistent with natural processes." /d. The purposes, significance statements, and mission goals were based on the Park's "enabling legislation, legislative history, agency management policies, and the knowledge and insight of the Park staff." /d.

Since over 90% of the Park is legislatively proposed for wilderness designation, and according to NPS policy, must be managed as if were established wilderness, it is clear that the primitive zone exceeds this requirement. It is not clear that the restrictions on group size in the primitive zone is necessary to manage for wilderness characteristics.

It is interesting to note that the plan asserts that management for wilderness "carries certain expectations for visitors, such as the opportunity to experience solitude and quiet. But these opportunities cannot always be met in some areas of the back country due to the behavior and number of other visitors." p. 9. The "behavior" of "other visitors" that interfaces with the expectations of solitude and quiet of "visitors" is not specified, nor is the frequency of this behavior noted. In fact, the frequency of occurrence of this "non-wilderness" behavior in the wilderness is probably not known, given the limited data available (see below).

Furthermore, "the majority of visitors do not participate in back country camping, canyoneering, horseback riding..." P. 118. "Most visitors do not stay overnight in the Park and do not enter the Zion back country." P. 121. Given that "[t]he 1992 visitor survey found that 3% of Park visitors went to Lva Point" (P121.) which is accessible by road, it is clear that a much smaller percentage visited the Park's wilderness by foot. Indeed, "[c]ompared to the amount of recreational visits (2,445,514 in 1997), it is readily apparent that overnight use of the Park (272,492 overnight stays in 1997), accounted for only a small portion of the Park's recreational use." P. 122. The vast majority of these overnight stays occurred in the developed campgrounds and the lodge, not in the back country. Based upon the 1997 data found in Table 10 (P. 124), looking at the busiest month for back country camping (4,356 in October) and assuming all of those visitors stayed one night in the 94% of the park zoned primitive or pristine, they would each have almost 32 acres in which to find solitude and silence. However, undoubtedly, most of these campers went in groups of two or more and were spread out over the month. It is interesting to note that the draft plan discounts the fact that overnight visits to the back country remained roughly steady, (or decreased) for 1995 - 1997. There just isn't a basis to conclude that people couldn't find solitude and silence even under the current management scenarios.

In spite of the limited use by wilderness enthusiasts, the plan appears to be largely focused on the concerns that "visitor expectations regarding solitude may not always be met in some areas due to the number of other visitors." P. 121. It is unfathomable how the Park has chosen to give the "expectations" of "visitors" precedence over those of "other visitors." P. 121. There is simply no objective articulation for this choice. Indeed, who are the "visitors" with "expectations," and

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CONSULTATION AND COORDINATION

who are the "other visitors?" In fact, the data suggests that, whenever they are, the "visitors," the ones with the "expectations," are in a small minority:

"Park staff have received comments indicating that some visitors feel that Zion is too crowded in certain areas and at certain times and that it is too difficult to experience solitude and quiet. The 1992 visitor survey found that 37% of visitors felt crowded in the Park. The 1994 visitor survey found that although visitors had serious concerns about parking and crowding, these concerns had a minimal impact upon the impressions of their experience. Apparently, some people do not seem to be bothered by the increased visitation."
P. 119.

Undoubtedly, most of the visitors surveyed had visited 19% of the Park which would not be zoned primitive or pristine. Thus, the logical conclusion from the data, as presented in the Draft Plan, is that there is no need to severely restrict access to the 83% of the Park.

What is clear is that different visitors to wilderness behave in different ways and expect different experiences, and the Park has arbitrarily selected "some visitors" wilderness experience as the desirable one to manage for.

It is also clear that the Park simply does not have reliable data to support the severe restriction of use in 83% of the Park. The Draft Plan notes that:

The following are the highest VERP social data needs for the park:

- accurate counts of the number of visitors (and groups of visitors) who are currently using specific areas in Zion's proposed wilderness.
- the characteristics of visitors found at various sites in Zion's proposed wilderness.

P. 67.

Information on visitor activities and experiences was derived from "staff observations" and from two visitor surveys, whose results may not be truly indicative of visitor activities and experiences." P. 118. (box), also p. 124 ("A scientifically valid and reliable visitor profile is not currently available for ion.") Presumably, the "staff observations" formed the basis for the selection of the desirable "visitor expectations" discussed above, since the unreliable data could not provide this basis. The planning proscriptions were also based upon assumptions of increased visitation that were admitted to be "subject to a high probability of error because the method used is simplistic, relative little data are available, and there is no cause and effect relationship between past use and future use." Pp. 125-126. Thus, the selection of use restrictions not called for to protect Park resources and not called for to meet expectations of the large majority of Park visitors is clearly arbitrary.

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Furthermore, the restriction of horses has been decided upon before analysis was done.
"As part of the wilderness management plan, the use of horses in not would be analyzed." P. 18

While it may very well be true that some additional restrictions are necessary to protect Park resources and that some areas of the Park should be managed for those who have emphatic expectations of solitude and silence, the uses drawn in this Draft Plan do not meet muster.

The language of the Plan raises concerns that the National Park Service will seek to control actions on private property. The Plan recognizes that there are 1,490 acres of private holdings in the Kolob Terrace area, on the west side of the Park. P. 5. It expresses concerns that private developments and management practices could affect the scenic views from the Park, the night sky, the ambient sound levels, opportunities for solitude and silence, the composition of native plant and animal communities, and wildlife migration/habitat corridors. They can also restrict or close off visitor and staff access to parts of the Park." P. 12

22. Thus, "Park managers would seek agreements with landowners to encourage their lands to be managed in a manner compatible with Park purposes. Park staff would also seek ways to provide land owners with technical and management assistance to address issues of mutual interest." P. 16. This language of voluntary cooperation, standing alone, might not be alarming. But the Plan also states that "The Zion National Park Land Protection Plan" (NPS 1981) identifies priorities and strategies for acquiring Park inholdings. The lands protection plan states that "the National Park Service will not seek to acquire any interest in private lands without the consent of the owner as long as their lands are devoted to compatible use." (p. 24, p. 218). This language carries the implicit threat that, if private property owners do not bow to National Park priorities, NPS will seek to acquire interests in this property through condemnation means.

The Plan notes that it would seek to "provide guidance for managing all horse sources in the Park" and external sources." P. 22

23. While it is appropriate that private vehicular access to inholdings continue on existing roads, it is somewhat troubling to note that NPS thinks such access occurs through its permit, not as of right. P. 24

The Park's concern with land use upstream of the Park should as it may affect the water chemistry/sediment load in the North and East Forks" should remain cooperative, not coercive." P. 16

24. In dealing with impacts to the proposed action, it is interesting to note that the cost of acquiring easements are not identified. P. 22

25. It is also interesting to note that those who had direct input into the Plan, were not truly "interdisciplinary." The background as suggested by R. C. R. (p. 16) that the members of the core team, the majority were biologists, environmental scientists and/or landscape architects.

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22. Under the Organic Act the National Park Service is required to protect and preserve unimpaired the resources and values of Zion National Park. Under NPS policy the Park Service makes every reasonable effort to reach an agreement to acquire inholdings from willing sellers. Condemnation is generally considered only as a last resort. In the case of Zion, we do not foresee the need to acquire interests through this means — we would seek cooperation with landowners to conform to the compatible uses as described in the "Land Protection Plan." But we recognize that condemnation is sometimes necessary to prevent damage, impairment, or unacceptable threats to park resources.

23. We have modified the text to indicate simply that private vehicles would continue to be able to access inholdings on existing roads.

24. Costs for easements were not identified because appraisals have not been made on the values of the easements. This is a detailed task, which is beyond the scope of the planning process for this *General Management Plan*. As noted on page 63 of the draft, the legislative proposal, and accompanying support materials that are submitted to Congress will include estimates of the costs of acquiring the easements.

25. We believe the planning team had sufficient backgrounds to meet the interdisciplinary requirement. The backgrounds of the core planning team included socioeconomics, natural resources, park administration, interpretation, planning, business administration, and landscape architecture. The planning team also drew upon a number of consultants and technical experts, including hydrologists, botanists, interpreters, cultural resource specialists, park maintenance staff, concessions specialists, social scientists, and outdoor recreation planners (see page 266 of the draft).

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There were also administrators, a civil engineer, and a geologist. One person had a Ph.D. in "resource economics." Other fields in the social sciences simply were not represented.

- 26 9 It is unclear whether sufficient consideration has been given to the potential impacts, including costs of the proposed North Fork changes. The extent of impacts in connection with flood events, including, but not limited to, threats to the road and trails, cost of armoring of the road grade and trails, relocation of some water and sewer pipelines and potential loss of the footbridges for the Grotto and Emerald Pools trails do not appear to have been carefully analyzed. P. 158.

- 27 10 The Plan also offers apparently gratuitous comments suggesting negative impacts of roads and grazing, without providing any basis. For example, the document suggests that the sediment transport of the North Fork of the Virgin River may be enhanced by road building and grazing on the watershed. P. 112. No basis is given for these allegations (indeed, there is no evidence in the plan to suggest that any road building has gone on in the watershed). Given the amount of natural sediment transported, it is unlikely that any meaningful component from road building or grazing could be measured. It is also interesting to note that, while mitigation is suggested to take care of impacts of actions the park service proposes to take, mitigation is not mentioned in connection with road building or grazing. Thus, for example, for Park projects, "[c]onstruction impacts would be temporary and mitigated by placing silt fencing, retaining and replacing topsoil, revegetating areas, selectively project work, or applying other site-specific measures that would reduce runoff from construction sites." P. 157.

- 11 It is interesting to note that, while the proposed shuttle system was given a "finding of no significant impact," the draft plan admits that "the way visitors experience Zion Canyon will change dramatically when the shuttles start operating." P. 119. A survey of NEPA documents would undoubtedly reveal that where the agency favors an action, a FONSI is more likely to be the end product of NEPA review.

- 12 The restrictions called for in the preferred alternative and alternatives A and B are not in keeping with the Park's purposes, significance and mission goals. If the following statement is true: "All of the alternative management prescriptions in this management plan should be and are consistent and support the Park's purposes, significance, and goals mission." P. 7. Then only the no action alternative should be considered. This alternative is the one most clearly in keeping with the Park Service mandate to make the Park available to the public, as well as to protect its resources for future generations.

- 28 13 The adoption of the wilderness, primitive, and pristine zones envisioned by the preferred alternative would mean that virtually the entire Park would be managed under the provisions of the Wilderness Act and in some cases, even more strict requirements. That would severely restrict the number of people and allowable activities including those Park visitors entitled to a Golden Eagle Passport. We believe that such restrictions on elderly Americans is not in keeping with the law, or the intent of the legislation creating the Park. No meaningful basis is offered for

RESPONSES

26. Without knowing exactly what actions would be taken to restore the river, it is not possible to analyze in detail the potential impacts. For the purpose of this programmatic environmental impact statement, we believe the analysis of potential impacts was sufficient. It is noted on page 52 of the draft that a subsequent river management plan will assess in more detail alternative approaches to river restoration. See also response 5.

27. The statement that roads and grazing may be adding to sediment loads in the Virgin River is made to indicate that sediment loads may not be entirely natural. It is primarily based on a history of severely degraded range conditions that occurred early in this century on much of the watershed. This led to extensive erosion control efforts from 1930 through 1960 and is documented by Steen (1999) and U.S. Bureau of Reclamation (1949). Slope failures on the watershed associated with roads crossing the Tropic Formation are identified by the U.S. Geological Survey (1993). Though it is recognized that considerable improvement in watershed condition has occurred, current observations find that conditions that might be contributing to enhanced sediment loading still exist. These include roads along many major and minor streams, road construction to new residences, and sparse vegetative soil cover. Use of "road building" may incorrectly imply an imminent threat from new roads that does not exist. This term has been changed in the final document to simply "roads" because existing and any new roads are a concern.

28. We believe that wilderness and the zones in this plan do not restrict elderly Americans from using the park's backcountry. Most of the existing trails and routes in the backcountry would remain available to all visitors under the preferred alternative. Aside from the limits on group sizes and group numbers in different parts of the recommended wilderness, no restrictions are being proposed in the plan that would prevent visitors, including elderly Americans, from going into the backcountry. See also response 4 to the Kane County Commission and "Clarifications of Commonly Raised Public Concerns," concerns 6 and 10.

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RESPONSES

distinguishing between lands which are placed into primitive versus pristine zones, the vast majority of the Park is placed under restrictions which go above and beyond what is necessary to maintain the lands in a condition suitable for wilderness designation. In our experience, this is an unreasonable and unwarranted restriction on the ability of the average American, particularly elderly people to visit, enjoy, and benefit from the natural wonders of Zion National Park.

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Local Government

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COMMENTS



Feb. 24, 2000

Darla Selles
Zion National Park
Springdale, UT 84767-1299

Dear Ms. Selles:

1. This letter is written to comment on the Draft General Management Plan/Environmental Impact Statement for Zion National Park. I am writing to express a significant concern and objection with regard to the proposal to place the area in the vicinity of Horse Ranch Mountain into the primitive zone, thereby precluding access by horses. This area is adjacent to significant livestock ranching on property outside the park. As you should be aware, spillover is often left open by recreationalists or others who access the park in this area. Fences are also damaged. As a result, cattle and/or sheep may enter the park. There is simply no way for the owner of the property to locate and move them back out of the park without using horses.
2. The prohibition of horses from this and other areas of the park which are proposed to be placed in the primitive zone is simply unwarranted and unreasonable. The draft plan discusses no rational basis for this proposed action.
3. I am also concerned about your intended placement of roads which access private property in the area. While the draft plan states that "Park managers would continue to permit private vehicle access to the inholdings or existing roads, unless the land and associated roads were acquired" (p. 24), the maps do not show any of these roads. Thus, it is unclear which roads the plan is referring to. The plan should make it clear that no new road will be closed in the park, so long as it provides access to any private property.

Thank you for your attention to these matters.

Ronald W. Thompson
Ronald W. Thompson

RESPONSES

Washington County Water Conservancy District

1. The intent is to prohibit recreational use of saddle stock in this area. We would work with the adjacent landowner to prevent livestock from trespassing in the park, and thus minimize the need for the landowner to ride into the park.
2. Horses have been permitted in this part of the park only on existing trails, like the West Rim trail above the Main Zion Canyon. Under the preferred alternative this use would continue to be allowed. See also "Clarifications of Commonly Raised Public Concerns," concern 11, response 2 to Representative Harper, and responses to the Backcountry Horsemen of Utah.
3. All the alternative maps in the draft clearly state that private vehicle access to inholdings and existing roads would continue unless the inholdings and associated roads are acquired. See also Washington County response 23.

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RESPONSES

February 23, 2000
Washington County Water Conservancy District
Comments on the Draft General Management
Plan/Environmental Impact for Zion National Park

General Comments

It was gratifying to note the acknowledgment of the 1994 Zion National Park Water Rights Settlement Agreement and that the National Park Service intends to fully comply with this settlement agreement. Also that the NPS acknowledges Utah State authority to control appropriate rights within the Virgin River drainage.

We recommend adoption of the "no action" alternative. This alternative is the one most clearly in keeping with the park service mandate to make the park available to the public, as well as protect its resources for future generations.

Specific Comments

4 The restrictions called for in the preferred alternative and alternatives A and B are not in keeping with the park's purposes, significance and mission goals. If the following statement is true: "All of the alternative and management prescriptions in this management plan should be and are consistent and support the park's purposes, significance and goals mission", (page 7). Then only the no action alternative should be considered.

5 The adoption of the wilderness, primitive and pristine zones envisioned by the preferred

4. The Park Service believes that all of the alternatives presented in the document are consistent with and support the park's purposes, significance, and management goals.

5. See Washington County response 28.

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RESPONSES

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5 alternative would mean that virtually the entire park would be managed under the provisions of the Wilderness Act and in some cases even more strict requirements. That would severely restrict the number of people and allowable activities including those park visitors entitled to a Golden Eagle Passport. We believe that such restriction on elderly Americans is not in keeping with the law or the intent of the legislation creating the park. No meaningful basis is offered for distinguishing between lands which are placed into primitive versus pristine zones, the vast majority of the park is placed under restrictions which go above and beyond what is necessary to maintain the lands in a condition suitable for wilderness designation. In our experience, this is an unreasonable and unwarranted restriction on the ability of the average American, particularly elderly people to visit, enjoy and benefit from the natural wonders of Zion National Park.

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6 There is no acknowledgment or indication that the core team recognized the Kolob terrace road is a Washington County road and provides access not only to the Kolob Terrace area of the park but also is a transmountain link between Washington and Iron County. Park management must acknowledge such uses and not attempt to restrict through vehicle use on this road to areas outside of the park.

7 In view of the Park Services statement of its intent to fully comply with the 1996 Water rights settlement it is difficult to interpret the meaning of the statement on page 14 under water quality and quantity, "that a number of water resources issues exist in Zion including water rights". The purpose of the settlement was to resolve such questions. There should be no question about water rights. On page 49, the statement is made that the National park service

8 would study water supply and treatment alternatives, including procurement of treated water

6. See Washington County response 7.
7. See Washington County response 11.
8. See Washington County response 12.

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RESPONSES

8 from Springdale and construction of a new water treatment plant inside the park. It should be understood the water right settlement did not contemplate the park service moving water rights outside of the park which would be necessary under this proposal.

9 The proposal to remove the flood control and bank protective structures on 4.5 miles of the Virgin River channel in the vicinity of Zion Lodge could have significant long term costs and detrimental effects. The park service planners would do well to understand why these facilities were found necessary in the first place before they decide to remove them. The statement on page 147, under conclusions, that the no action alternative would have a moderate to major long term adverse effect on the north forks natural river process within the park is without foundation. Many of these facilities were built in the 1920 and 1930's are natural appearing and at this time do not have a significant effect upon the natural river processes. The effect of removal of these levees and controlled structures on sediment and destruction of stream bank vegetation is grossly understated in the impact section of the plan. It is interesting that the core team did not include a hydrologist nor did the bibliography refer to any publications which would relate to or give information on this subject.

9. See Washington County response 5.

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COMMENTS



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Mayer
Karen L. Mayer
City Manager
Keith L. Winkler
Treasurer
Paul Ann Johnson
City Attorney
Van Macchopany

February 23, 2000

Mr. Don Fahy, Superintendent
Zion National Park
Springdale, Utah 84767-1099

Dear Superintendent Fahy:

First of all I would like to thank you for extending the comment period on the Utah General Management Plan.

Kanab City would like to register a lot of concerns and formally request a copy of the proposed General Management Plan when it becomes available.

1. We feel that an Advisory Council should be created which should consist of representatives from other federal agencies, state agencies, Kane and Washington Counties, Coconino/Navajo, and scientists. This council could assist in adaptive management activities, and in providing regular advice to park management.

2. Although Kanab City is surrounded by open lands, we feel that federal management is limiting group sizes and restricting certain types of activities on public lands. We feel that a better structure needs to be established in regards to group sizes especially when no resource impacts will occur. Historically, we enjoy family outings and now because of some of the group sizes this will become prohibited. We are well aware that the park administration must protect Zion's resources but we feel that by working together we can live as good neighbors.

There are many horse riding clubs in our area. Our horsemen enjoy exploring and riding in parties of more than four. We would like the Management Plan to reflect what we believe is our culture and heritage and horses have always been a part of Zion National Park.

3. There should be some consideration of boundary adjustments and to avoid cherry stemming. We oppose the acquisition of the 80 acre Rockville Bench parcel. That area is a place where many visitors can enjoy mountain biking which is not creating undue resource impacts.

RESPONSES

Kanab City

1. See response 1 to the Five County Association of Governments.
2. See responses 2 and 4 to Kane County Commission, response 3 to Washington County, and "Clarification of Commonly Raised Public Concerns," concern 10.
3. The proposed boundary adjustments would add to the park the heads of canyons and complete drainages or other prominent features. The proposed addition of these small parcels would not result in "cherry stemming", but would incorporate entire geographic features into the park.

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RESPONSES

- 4 East Mesa and East Rim Trails should be removed from any wilderness or primitive designation. This will allow for mechanized use of the trails by bicycles, wheel chairs, or other means not allowed in a wilderness designation.

We hope you will give some consideration to these comments as you complete the General Management Plan. Please let me know if any additional clarification is needed. We would formally request a copy of the proposed General Management Plan.

Sincerely,

Karen L. Abey

Karen L. Abey
Mayor

- 4 We cannot remove these trails from the wilderness recommendation. See "Clarifications of Commonly Raised Public Concerns," concern 13.

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COMMENTS

RESPONSES



TOWN OF ROCKVILLE

PO Box 630206
Rockville, UT 84763
Phone/Fax: (435) 772-0992

Founded 1862
Incorporated June 30, 1987

February 29, 2000

Donald Falvey, Superintendent
Zion National Park (ZNP)
Springdale, UT 84767


Dear Superintendent Falvey:

I wish to thank you for the opportunity to comment on Zion National Park's Draft General Management Plan (DGMP) which has been made available to the public for comment. My comments will deal specifically to the proposed addition of 311 acres of land currently managed by the Bureau of Land Management (BLM) within the boundaries of the Town of Rockville.

We, the town, strongly endorse the DGMP's proposed action to add this acreage to the Park as it will:

- provide long-term protection of scenic values for the Park, as well as Rockville
- protect important and unique resources, eg. petrified wood, archaeological sites, and sensitive native plants and soils
- maintain the natural character of the land, and
- provide the opportunity to restore the damage created when an unauthorized bike trail was constructed against the wishes of the Town and the BLM (see attached material)

This letter represents the desire of the citizens of Rockville and their elected representatives to offer our support for the Park's proposal to add BLM land within Rockville to ZNP, to remove the unauthorized trail, restore the affected land to a natural state, and to manage the 311 acres in keeping with Park standards and values.

Sincerely,

David M. Hatfield
Mayor

CONSULTATION AND CORROBORATION

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RESOLUTION 96-0619-SA RESOLUTION TO ELIMINATE THE USE
OF BICYCLES ON THE BLM LAND
ON THE ROCKVILLE BENCH

WHEREAS a mountain bike trail has been illegally built on Bureau of
Land Management land on the Rockville Bench within Rockville, Utah, and

WHEREAS said mountain bike trail has become a public nuisance due
to trespassers from the BLM land onto adjoining private properties and into
Zion National Park.

THEREFORE, the Town of Rockville resolves that there be no use of
bicycles on the BLM land located on the Rockville Bench within Rockville,
Utah.

THIS RESOLUTION will become effective immediately upon passage and
signature.

DATED AND PASSED this 18th day of June, 1996.


Eldon C. Harris, Mayor

Attest:


Elaine M. Harris, Town Clerk

Local Government

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COMMENTS

TO: DARLA SIDLES
PARK PLANNING COORDINATOR
ZION NATIONAL PARK
SPRINGDALE, UTAH 84767-1099

DEAR PARK PLANNER AND PARK SUPERINTENDENT,

PLEASE ENTER THESE COMMENTS INTO THE OFFICIAL RECORD FOR THE
ZION NATIONAL PARK PLAN AND ENVIRONMENTAL IMPACT STATEMENT

COMMENTS ON DRAFT GENERAL MANAGEMENT PLAN / ENVIRONMENTAL
IMPACT STATEMENT FOR ZION NATIONAL PARK, UTAH

1. The Zion National Park Draft Management plan is designed to be a plan for the next 20 years of Park Management. It has been prepared with NO effort to coordinate with the County General Land Use Plans of the three counties it impacts, nor with any attempt to coordinate with County Commissioners or Planners. The only efforts made were occasional presentations to 5 Counties and SUPAC, telling them that the Park Service was working on a plan. We believe that a plan of this magnitude, which will affect County Planning and Economies for a long period of time, must, by law and necessity be closely coordinated with County Governments being recognized as equal partners in the process, and County Land Use Plans being respected.

AGREE

DISAGREE

NO OPINION

2. The Zion National Park Draft Management Plan was poorly publicized; most participation in the process was by special interest groups; and, with the exception of working with the town of Springdale to get their support for the shuttle, was not coordinated with the surrounding communities, particularly the communities to the east of the Park. A plan of this magnitude is going to directly affect the communities surrounding it, not only economically, but because it is in their "backyard". The local citizenry love the Park, and are frequent visitors. We feel that the Park Service must include local communities in their planning process, if they are to come up with a workable plan that will respect ALL of the local environment.

AGREE

DISAGREE

NO OPINION

3. Overcrowding and negative impact is occurring in the main Canyon, and at the same time, less than 1 percent (1%) of the visitation is in the backcountry. In the Proposed Plan, more areas will be restricted, resulting in 99% of visitor use occurring on 14% of the Park lands. A more logical solution to this would be to make access more available to other areas in the Park, with more trails and facilities, to help channel some of the visitors away from the heavily impacted areas.

AGREE

DISAGREE

NO OPINION

RESPONSES

Mayor of Virgin

- See response 1 to Washington County. The other counties did not comment to this effect.
- We agree that it is very important to involve local citizens and communities in the development of this *General Management Plan*. But we disagree that local communities and citizens did not have sufficient opportunities to participate in the planning process. The planning team used newsletters, flyers, press releases, and *Federal Register* notices to keep local citizens and communities informed about the planning process and solicit their input in developing the plan. Our mailing list included people throughout the region, including those living on the east side of the park. Most of the people who provided input on the draft plan, either at the public meetings or through written comments, were local citizens, not special interest groups. See also responses 1 and 20 to Washington County.

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ZION COMMENTS PG. 2

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4. According to the Park Service's opinions, this new plan will have little impact, or perhaps a slight positive impact on the economy of the local communities. There has been little actual study done, this is mostly conjecture. We feel that, given the importance of Zion National Park to the local and state economy, much more thorough studies must be done, in conjunction with state and county agencies.
- AGREE DISAGREE NO OPINION
5. One of the main reasons they are giving, in this plan, for such severe restrictions on visitor use, is to protect the "microbiotic crusts". However, the research they are using, is quite inconclusive as to the value of these crusts, and more independent research that we are aware of actually shows these crusts to be detrimental to biodiversity. We feel that the science is not adequate to support such extreme land lock-ups, and more research must be done before policy can be made, and it must include outside sources.
- AGREE DISAGREE NO OPINION
6. Horseback riding is a popular and traditional use in the Park. Besides being one of the best ways to see the scenery, under the current Wilderness management, it is the only way that disabled or handicapped people can get out on the trails, as wheelchairs are banned. Studies conducted in other National Parks conclude that the only damage horses cause is in areas where they are concentrated. At the present time, there are no restrictions as to where a person can ride, including off trail, which is best. The new plan will only allow horses to use a couple of designated trails that will also be used by hikers. We believe that this will cause conflicts between horses and hikers, and will lead to degradation of the resource due to concentration of use. We feel that this is extreme discrimination, not warranted by scientific evidence, for which there is no justification. Horses play an important role in search and rescue, especially as the Park is being managed as a Wilderness. If they are banned, how can proper search and rescue be carried out? We feel that this issue deserves some very serious study and public input.
- AGREE DISAGREE NO OPINION
7. Tubing the river is extremely popular, especially in hot summer months. There are whole businesses based on renting out float tubes, and taking people down the river. In the new plan, this activity will be BANNED. We believe that this is an unfair discrimination against this very popular activity with no science to support any harmful effects caused by it. It will obviously have extreme negative impacts on those businesses involved. We do not feel that this activity should be arbitrarily banned without much more study, both of its environmental effects, and the economic impact of eliminating it.
- AGREE DISAGREE NO OPINION

3. The economic impact conclusions in the draft plan were based on the professional judgment of the resource economist on the planning team. The level of economic analysis in the plan is consistent with what is normally done for general management plans.
4. It is the intent of the plan to provide opportunities for visitors to enjoy the park and its resources without degrading those resources. Consequently, the plan allows use patterns much as they currently exist, but with adjustments as needed to protect the resources, including microbiotic crusts. The ecological role of these crusts varies from ecosystem to ecosystem. There are many factors that can limit plant establishment and growth, and knowing soil types and conditions is critical in assessing the role and function of microbiotic crusts in any ecosystem. In sandy loam soils of the western U.S. plants occur with a more even and closer spacing (generally less than 4 feet) and thus the ecosystem requires higher overall levels of nutrients and water. The presence of crusts have shown to greatly enhance seedling establishment, water infiltration, and nitrogen content of soils in these ecosystems, and thus aid in maintaining the higher plant density (pers. com., Jayne Belnap, USGS).
5. For years horses have been prohibited on certain trails, and off-trail use of horses has been limited to a few areas where the resources can sustain this use. The preferred alternative would ban off-trail use in two areas (upper Coalpits and Dalton Wash) where there are sensitive resources that have been or could be impacted by horses. But otherwise, the preferred alternative would not result in any substantial reduction in areas where horse use is currently permitted. See also response 2 to Representative Harper and "Clarification of Commonly Raised Public Concerns," concern 11.
6. See response 2 to U.S. Fish and Wildlife Service and "Clarification of Commonly Raised Public Concerns," concern 8.

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<p>ZION COMMENTS PAGE 3</p>	
<p>8. Mountain biking is an extremely popular sport, and is an excellent way to see the Park. However, Wilderness management of the Park bans mountain bikes, and even though many people come here with their bikes on their cars, they can only ride them on the roads. In addition, a very popular trail, on BLM land just outside of the Park, will be eliminated because the Park Service wants to annex that parcel of land into the Park. We feel that this is another way of enjoying the National Park that is being discriminated against without adequate scientific justification, and ignoring public opinion. It also will have a very negative impact on local economies, as a number of businesses rent out mountain bikes. We feel that this issue deserves much more scientific study, and cooperation with local communities and businesses before such decisions can reasonably be made.</p> <p>AGREE DISAGREE NO OPINION</p>	<p>7. See "Clarification of Commonly Raised Public Concerns," concern 9 and response 6 to the Five County Association of Governments.</p> <p>8. See response 1 to Representative Harper, responses 2 and 4 to Kane County Commission, response 3 to Washington County, and "Clarification of Commonly Raised Public Concerns," concern 10. With regard to adding more trails, the park's terrain severely limits where additional trails could be provided. For much of the park it is not possible to improve access except at great financial cost and potential resource damage.</p> <p>9. We agree it is necessary to work closely with local communities and landowners in planning prescribed burns or fires. See also response 5 to the Kane County Commission and response 20 to Washington County.</p>
<p>9. According to the statistics given in the Plan, only 7% of the 2 1/2 million visitors who came to the Park in 1998 visited the backcountry, most of those to hike. Despite this low use of over 90 % of the Park, the Proposed plan has placed severe restrictions on hiking, limiting the number of groups in the Pristine areas to less than 12 groups per day, with 5 or less people in each group. This level of restriction effectively eliminates Boy Scout troops, and the average Utah family. We feel strongly, that most of this Park is underused, and there are vast areas of beauty that people are already denied access to, such as Parunuweap Canyon. Instead of restricting these areas more, we feel that the Park Service should be aggressively working to make more of the beauty of the Park accessible to the public.</p> <p>AGREE DISAGREE NO OPINION</p>	
<p>10. Zion National Park enjoys a class I air quality designation and claims significant authority over activities in the surrounding area that could affect air quality. However, there is nothing that occurs in the rest of Southwestern Utah that has a more significant nor detrimental effect on air quality than the burn policy of the Park service. The "controlled" burn that they implemented in the Fall of 1999, burned out of control for over 3 weeks, reducing visibility in the canyons to less than 2 miles, and causing severe health hazards for many of the young and old who live in the area. It was totally unacceptable, and not the first time. They have not even released the amount of acreage that actually burned, so it is difficult to calculate the exact amount of pollutants put into the air. "Scientists have calculated that the emissions EVERY SECOND from a vegetation fire covering 1.5 acres is equivalent to the carbon monoxide emissions produced per second by 3,694 cars and the nitrogen oxides produced per second by 1,260 cars." In addition, a very destructive gas, methyl bromide, is also a byproduct. The bromine in methyl bromide is 50 times more efficient than chlorine in destroying upper-level atmospheric ozone. There are a number of other methods available to reduce fuel loading and improve the</p>	

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- 9 biodiversity of the land that are more environmentally friendly than burning. We feel very strongly that no fires should be purposely set, until a study has been conducted to examine all of the alternatives, and the counties and private sector should be involved in the decision-making, because they have to live with the consequences.

AGREE DISAGREE NO OPINION

- 10 11. There are several thousand acres of privately owned land in and around the Park. Much of it has been in one family for generations, other parcels are used for recreation, and have summer homes on them, some are in active agricultural activities. In the new Park plan, the Park service takes a rather aggressive stance toward the acquisition of 3300 acres of land both in and surrounding the Park. This idea of creating a "Buffer Zone" around the Park is a very alarming one, and we feel very strongly that no money should be allocated to the Park Service to acquire more land when they claim to not have enough to properly manage the land that they are already supposed to be managing. No private land should be purchased by the Federal government without consent of the state, either. It is time to recognize that private property has some protection under the Constitution, and there is no valid reason for the National Park service to be adding more land to lock away from public use.

AGREE DISAGREE NO OPINION

- 11 12. There is another alarming issue contained within this plan- the National Park Service claims that S.R.9, which goes through the Park, actually belongs to the Park, and this plan asserts the Park's right, in the future, to close that highway to through traffic, except for a shuttle system. This is a very important route for property owners and local citizens, to access their jobs, or their property. We feel that this is an issue that needs to be clarified as soon as possible.

AGREE DISAGREE NO OPINION

- 12 13. Recent criteria adopted by the National Park Service and BLM to evaluate segments of drainages for Wild and Scenic River designations go against the Wild and Scenic Rivers Act Law that specifically states that consideration of rivers should encompass the entire river unit. The Interior Department's criteria is allowing small segments of dry wash drainages, small creeks, and perennial washes to be designated "Wild and Scenic". This is contrary to the law's intention. The only River portions that come through Zion National Park are the forks of the Virgin River, and these are the only ones that should be considered.

AGREE DISAGREE NO OPINION

10. See response 3 to Representative Harper.

11. See response 1 to the Kane County Commission and "Clarification of Commonly Raised Public Concerns," concern 1.

12. The process used to conduct the eligibility assessment is described in "Wild and Scenic River Review in the state of Utah: Process and Criteria for Interagency Use," (July 1996), which the Park Service believes is consistent with the intent of the Wild and Scenic Rivers Act. Specifically the Act defines a river as "a flowing body of water or estuary; or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes." For purposes of eligibility evaluation, the volume of flow is sufficient if it is enough to sustain or complement the outstandingly remarkable values identified within the segment. Rivers with intermittent or nonperennial flows exist within the National Wild and Scenic Rivers System and may be representative of rivers within particular physiographic regions, such as the Colorado Plateau.

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14. Because of the lack of coordination with communities and local government, and the lack of unbiased scientific studies and statistical analyses on economic ramifications of the Proposed Action in the Plan, the National Park Service should adopt a No Action Alternative until adequate study and local involvement is done to properly guide management for the next 20 years.

AGREE

DISAGREE

NO OPINION

For Entry into National Park Service records of Public Comments

Name: Jay W. LeeTitle: Mayor Town of VirginiaAddress: PO Box 790213Virginia, wt 24779Signature: Jay LeePhone - Optional: 435-635-4959

My Additional

Comments:

Is Zion National Park a National Park
or a wilderness?
I do not feel that the park can be
effectively managed as both. I feel that the
wilderness study area designation should be lifted
and the park be a park that brings about people and
is out there to serve people and educate them on
the wonders of our unique area. The park com-
mittee people planning land effort accommodate the
millions of visitors the Zion. People don't need a wilderness
experience in Zion National Park. What they need is a
place and experience being a part of it for a moment.
on time, and that will start to happen. Those who
would take out the horses for their own personal agenda
are very selfish. They are. They were made aware they can
go to Zion. Wilderness experience is, by name, but if we
shouldn't all be willing to share what belongs to us all.

Thanks
Jay Lee

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Western Region Office
820 Park Ave., # 510
Oakland, CA 94612
Tel: 811-770-1511
11 February 2003

Re: Donald Falvey, Superintendant
Zion National Park
Springdale, UT 84707-1099

Re: Draft General Management Plan and Environmental
Impact Statement for Zion National Park

Dear Superintendent Falvey,

This letter conveys the comments of the Access Fund on
the Draft General Management Plan (GMP) and Environmental
Impact Statement (EIS) for visitor management and resource
protection at Zion National Park.

The Access Fund

The Access Fund is a 501(c)(3) non-profit advocacy and
conservation organization representing the interests of
American rock and mountain climbers. The Access Fund is the
largest national climbers' group, with over 10,000 members.
The Access Fund's mission is to keep climbing areas open and
to conserve the climbing environment. Preserving the
opportunity to climb and the diversity of the climbing
experience are fundamental to our mission. The Access Fund
encourages an ethic of personal responsibility, self-
regulation, and minimum-impact practice among climbers;
works closely with local climbers, resource managers,
environmental organizations, and other interest groups to
manage and preserve climbing areas throughout the United
States; develops and distributes climber education
materials; acquires and manages land; and provides funding
for conservation and impact-mitigation projects, and for
scientific research relevant to the climbing environment.

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Access Fund comments on Zion GMP/218
5/11/88, page 2

General Remarks

The Access Fund supports the management strategy developed in the Proposed Action -- with reservations. We recommend that certain actions or language related to climbing be removed or modified in the GMP. We support the application of management zones to achieve planning goals, but suggest that zoning to the greatest extent possible be based on the results of scientific research, natural features of the landscape, and other criteria which can be readily understood as objective by the public. We also suggest the proposed to designate most of the park as wilderness, and the Park Service's management of these lands as wilderness.

Zion is one of America's most unique and awe-inspiring places. Like Yosemite, Zion is also one of the world's most unique and appealing areas for technical climbing. It is important that this value be clearly recognized in the GMP, with reference to the history of climbing at Zion and the park's commitment to preserving this recreational opportunity.

The first reference to climbing in the GMP is on page 17, where climbing and rappelling are described as activities which "have the potential to adversely affect park resources." A laundry list of possible negative impacts follows. We suggest that a balanced perspective is in order, and that a total overview of the many positive effects of these activities and the close association of these user groups with the park should be given.

The Access Fund supports the decision to address management of climbing and related issues in a future, use-specific plan. We offer our assistance in developing a climbing management plan for Zion, and request that climbers and other stakeholders be consulted before the actual drafting of planning alternatives. Specifically, we recommend the formation of a working group, composed of members of the public, representative from related interest groups, and Park Service personnel, to help prepare the climbing plan. Working groups have proven effective in helping to develop climbing management plans for other national park units such as Yosemite, City of Rocks National Reserve, and Joshua Tree.

Management Zones

It is difficult to discern from the draft plan exactly which zone the major rock formations in Zion and Kolob regions fall into. It appears that most of the big rock walls, and therefore most climbing activity, would be in either the transition zone, the primitive zone, or the primitive zone. Line management programs and practices would vary from one zone to the next. It would be helpful to have this point clarified. We suggest the inclusion of a statement, perhaps in "Zone Allocation and Related Issues" which identifies the most popular rock

RESPONSES

1. The majority of all of the popular climbing routes within Zion and Kolob Canyons are within the transition and primitive zones. The wilderness management plan, will address how the specific rock formations will be managed for climbing.

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Access Point comments on Zion NP/WRIS
8/18/89, page 1

formations for climbing and the zone under which these formations would be managed.

2

We will assume that most climbing activity falls into the proposed Primitive Zone. The use of this zone by climbers is consistent with the definition of this zone (ZMP at 17), although during prime weather periods climbers may not feel entirely alone on the most popular routes and could almost certainly expect to encounter other climbing parties. If these criteria are managed as standards, meaning that climbing activities would have to be reduced in this zone, then we are in favor of including the most popular climbing areas in the Transition or Primitive zones instead. Before any limits are placed on climbing activities in the Primitive Zone, climbing should be surveyed to assess their needs of being crowded (if any) and their support for management actions intended to ensure opportunities for solitude. At most, climbing areas should be not welcome restrictions aimed at quantifying a sense of solitude; climbers would rather find it on their own solitude. If that is a high value for the climbing individual or party.

In the development of any zoning framework there is the potential for resource managers to "restrict" certain visitor experiences that one could expect to find in each area. We urge the Park Service to refrain from prescribing standardized visitor experiences at Zion. Consistent with NPS Management Policies (1989), visitors should be free to use resources to the greatest extent possible to determine the quality and nature of their own experiences. In addition, any restrictions on visitor use should be the minimum necessary to achieve management objectives - education is favored over regulation, and any management intervention should begin with less restrictive actions and proceed to more restrictive only as necessary.

Limits on visitor numbers and group size

3

The ZMP proposes to implement low limits of numbers of visitors and group size in backcountry areas of the park. The principal objective of this action, as far as we can tell, is to ensure that there are few social encounters away from the Escalante zone. While low values of visitor experience at Zion are cited, they are described as "conducted under short time frames and involving small numbers of visitors." Thus results may not be truly indicative of visitor activities and experiences. (ZMP at 18). The ZMP also says (p. 18): "There is little data about the expectations of Zion visitors that would determine their perception of crowding." It is clear the Park Service does not yet have enough about visitor preferences to determine that reducing social encounters in the backcountry at Zion is a high priority, or conversely that many park visitors feel their experience in the park is compromised by the number of social encounters or over-large group sizes.

The Access Point comments suggest limits on visitation if there is an evident need for such limits. We can find any such evidence in



2. See response 1. As noted in the definition of the transition zone, during peak season there would be a low expectation of solitude due to sights and sounds of other people. Any limits on climbing use would be identified as part of the wilderness management plan.
3. See response 2 to the Kane County Commission.

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Screen Feed comments to Eric WDF/EIC
8/11/99, page 4

the GMP. In fact, it appears that desired conditions for visitors use and experience are pretty close to existing conditions. The plan states at 21 that desired conditions include "the vast majority of visitors [being] satisfied," and "Visitor use levels and activities are consistent with park purposes and desired resource conditions and visitor opportunities." It also states GMP at 9) that "most visitors rate their experiences at Zion as high" and that "most of the park's resources are in good condition."

We support the undertaking of a Visitor Experience and Resource Protection (VERP) plan for Zion NM as at 37. An objective analysis of this type is necessary to establish any "visitor carrying capacity" for the park. We recommend that no new limits be placed on backcountry visitor numbers until the VERP plan has been completed. While we are not in favor of allowing unlimited numbers of visitors into Zion NM, we are also not in favor of quotas unless there is a compelling need based on visitor feedback or quantifiable resource conditions.

Natural Resource Management

The Access Fund supports the proposed direction for natural resource management, and reliance on ecological principles to ensure that natural resources and systems remain healthy. We support discrete closures of cliffs to climbing where birds such as the peregrine falcon may nest, and we offer our help in monitoring raptor behavior and the

is sufficient to cause reactions. However, we do not believe it is necessary, or at least not always necessary, to close entire cliff faces of large rock formations such as Angels Landing or the Great White Throne to prevent a single nest from being disturbed; more specifically limited climbing routes such as the Chimney Trail, the Santa Ynez, and Tunnel Falls are more appropriate. We do not believe that the Santa Ynez and Tunnel Falls are appropriate for peregrines and other raptors may need less of a buffer some around nest sites. We also encourage the Park Service to continue to lift nesting closures early if it is clear that no birds will nest in the target area that year. Please refer to our handbook, *Climbing and Raptors*, for more detailed information and for a list of management strategies and techniques in areas where climbing takes place.

Transportation

The Arroyo Fund is concerned about the effects on climate of the 1997 SA and FOM for the Zion Canyon Transportation System. Due to the vagaries of their activity, climate may not be well served by a shuttle system in Zion Canyon which operates only during normal visitor hours and stops only at major visitor resource areas. If the GMP cannot consider strategies such as allowing private vehicles in the canyon during summer months then the SA should consider the possibility of an alternative system for the benefit of the backcountry users of the shuttle system, which did not require sufficient consideration in the 1997 SA.

4. Park personnel monitor the peregrine falcon territories that encompass popular climbing sites in the park. Closures to protect nesting birds are based on the results of this monitoring. The specific extent of these closures would be addressed in the wilderness management plan.

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Access Point comments on the 1987/88
climbing plan

and receive virtually no consideration in the 1987/88. It may be feasible for climbers to transport all of the equipment and supplies to the summit via the long, difficult trail from the shuttle to the summit when the buses are crowded. Climbers used to be able to and exit the canyon with all of their gear very early in the morning and very late at night. At a minimum the 1987/88 should state that further analysis of the transportation needs of climbers will be provided under the Climbing Management Plan or in the more comprehensive transportation plan mentioned in the 1987/88.

Permits

5 The 1987/88 states (p. 7) that, under the proposed action, "climbing and canyoneering would be managed under a permit system." No studies or management guidelines are cited to justify this change in policy. The Access Point does not support the management of climbing through a permit system. Climbers use the same routes regardless of the permit system. There are no studies that show that a permit system will be effective. The studies of the impact on the climbing experience in the park is the result.

There is also a need to provide information on visitor access and enjoyment of national park resources. The 1987/88 proposes to require permits for all other recreational uses of the park. What is the justification for this proposed action? It is unreasonable to implement a permit system for a long-term and appropriate use of the park with offering any analysis of the need for this action. The Access Point recommends that the proposed permit requirement for climbing and canyoneering be removed from the 1987/88 and considered properly under the Climbing Management Plan.

Summary

The Access Point commends the Park Service for preparing a reasonably well-researched and reliable plan. The treatment of climbing in the 1987/88 is of concern, since it is either too superficial or too restrictive without justification. We support all decisions related to climbing management, including use level restrictions and permits, be deferred to the Climbing Management Plan.

In Chapter 4 of NPS Management Policies (1988), an important statement is made to provide guidance in the management of recreation in the national parks: it is an obligation to "encourage recreational activities that promote a direct association of visitors to park resources." Rarely there is no activity with a more direct association and relation to park resources than climbing. Therefore this use should be recognized and managed with a very high value for NPS. The 1987/88 does very little to acknowledge or support this value.



5. The permit system ensures Park Service contact with climbers that allows communication of regulations governing climbing and canyoneering, and provision of information on sensitive resources, low impact techniques, and safety considerations. Because of the inherent hazards associated with this type of recreational use in the park, direct communication with these users is considered essential. Specific details on the permit system will be addressed in the wilderness management plan.

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Answer Park comments on RMA 000/010
8/11/90, page 4

The CMP admits the Proposed Action will result in a more "structured" visitor experience, at least in frontcountry areas of the park. In addition, visitor choices regarding their preferred experience will be reduced. Although visitation levels are projected to rise, the condition of most park resources, and the satisfaction of park visitors, remains good. We think the pressure of additional visitors on park resources and values can be mitigated through less intrusive strategies. Lastly, for most visitors it is very important to be free to define one's own experience. We suspect this is true for other user groups as well. The CMP goes too far in prescribing visitor experience. The proposed management zones can be applied without affecting the Park Service's ultimately policy-informed notion of what kinds of experience people want or should find in them.

Respectfully,



SAM DAVIDSON
Senior Policy Analyst

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COMMENTS

BACK COUNTRY HORSEMEN OF UTAH
PO BOX 13195 OGDEN, UTAH 84412-3195

February 22, 2000

Darla Sidles
Park Planning Coordinator
Zion National Park
Springdale, UT 84767-1099

Dear Ms. Sidles:

Thank you for the opportunity to respond to your Draft General Mgmt. Plan and EIS for Zion National Park. We understand that your objective is to maintain a non-impaired standard and to prevent degradation of resource within the Park boundaries. We strongly support that objective.

We have some urgent recommendations relative to two management directions within your proposed Preferred Alternative. They are as follows:

1. *Limitation of number of horses and people per group:* When Coronado and other early Spanish explorers first began to explore the North American Southwest, Native Americans soon realized the value of the equine. While the Spanish had and have produced great horsemen, no one was more adept at incorporating the horse into their world than the Native American, a people who lived and traveled as a part of, rather than apart from, their ecosystem. So too did the early settlers and cattlemen of this very area. The horse and mule were partners in the exploration of a great American West. Today, while the risk may not be so great and the distance so far, this partnership of man and beast continues in following our forefathers' hoof and foot prints through our modern backcountry. These areas surely must be preserved for just that. And, they present the strongest kind of opportunity for the Park Service to preserve the land and the history and the traditions. We urge you to do just that, and not arbitrarily limit this kind of access.

1 The Coalpits Wash, Huber Wash, Scoggings Wash and the Crater Hill areas are currently being used by horsemen and were formally used by the Park personnel when they still had horses. There were other uses of the area as well. Whether or not these areas qualify for pristine designation under Park Service criteria, occasional off-trail use by horse and mule would not degrade the historical nature of these remote areas.

2 At present, there does not exist sufficient scientific information as to just what amounts and kinds of horse and mule traffic would actually adversely affect this area, or indeed, if any limitation is needed at all. Whether or not traffic might be harmful, is a function of how it is managed, times of the year, and other factors. To impose strong restrictive limitations without thorough scientific justification is inequitable. It singles out an important historical user group

RESPONSES

Backcountry Horsemen of Utah, Chairman of Public Lands

1. The preferred alternative has been revised to state that off trail use of saddle stock in the primitive zone would be permitted only in the lower Coalpits Wash, from the trailhead to the junction with Scoggings Wash, Scoggings Wash itself, and Huber Wash. This would be a minor change to where saddle stock are currently permitted in the park. See also "Clarifications of Commonly Raised Public Concerns," concern 11.
2. We received many comments regarding the proposed changes in use of horses in the park. Please be assured that we recognize that horseriders have a long history of use in Zion and that they have been conscientious supporters of our efforts to protect the park's resources. The plan recognizes that horse use is a traditional activity and specifies that this use would continue. The actions proposed in the draft plan were intended to ensure that the park's resources are not impaired in the future. However, we also recognize that we may have been premature in proposing some of the management actions related to saddle stock in the draft plan. The final plan has been revised to largely reflect current management of saddle stock in the park. The use limits in the final plan are identified as interim limits until the carrying capacity studies and the wilderness management plan have been completed. Additional interim management actions may be taken if required to address resource impacts. We do not believe most saddle stock groups would be affected by these actions. See also response 2 to Representative Harper, response 16 to Washington County, and "Clarifications of Commonly Raised Public Concerns," concern 11.

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2. without scientific or practical justification and does not meet the test of reasonableness. It could arguably be considered arbitrary and thus unlawful.

Recommendation: Do not impose restrictions upon horse traffic beyond what has become a common standard throughout the West in most Parks, Monuments and National Forests, i.e. twelve horses or mules and twelve riders. Do not close any existing trails without specific public input. Rather, join with horse users, academic institutions, and other interested groups, including Back Country Horsemen, to study demand and impact before finalizing any more restrictive limitations. In this way the resource and public would be better served and at the same time, better meet all legal requirements. We suggest that all trail heads that are to serve recreation stock users be designed and constructed in a manner that will facilitate the parking of pickups pulling horse trailers and a dumpster to encourage users to clean-up.

3. 2. *Handicapped access and safety:* These vital issues and should be more thoroughly addressed

Recommendation: Fully develop policies that provide for the handicapped and their right to access under Federal laws. In many cases horseback is the only way for the handicapped to gain access and is another way in which fully comply. Limiting the number of horses to very small groups can magnify safety risks in remote, rough backcountry, particularly where packing is required.

It is our sincere hope that you will act upon these comments and recommendations. We are confident that by working closely together with all public interests, a satisfactory plan can be achieved. As you know, Back Country Horsemen of Utah are eager to volunteer help on the ground, as well as with policy matters. This is in accordance with our National Memorandum of Understanding with the National Park Service. Please feel free to contact us.

Sincerely,



Don T. Nebeker, Ph.D.

Chairman, Public Lands

Cc: Congressional delegation

RESPONSES

3. A new section on accessibility has been added to the "Park Policies and Practices" chapter in the final plan, which states the NPS policy on access for the disabled. NPS policy is to make all reasonable efforts to make NPS facilities, programs, and services accessible to and usable by all persons, including those with disabilities. The Park Service is committed to complying with the intent of the Architectural Barriers Act of 1968, the Rehabilitation Act of 1973, the Americans With Disabilities Act of 1990, and the 1984 Uniform Accessibility Standards. We agree that horses are one way the disabled can access Zion's backcountry and support this use. However, limiting group size does not necessarily adversely affect visitor safety. We believe that the revised interim saddle stock group size limits in the final plan are sufficiently large to satisfy safety concerns for the disabled to enjoy Zion's backcountry.

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Doris Sidles
Park Planning Coordinator
Zion National Park
Springdale, UT 84767-1099

Dear Ms. Sidles:

As chairman of the Back Country Horsemen of Utah (BCHU) and a state director on the National Board of Directors for the Back Country Horsemen of America (BCHA), I would like to submit the following comments on the Draft General Management Plan and EIS for Zion National Park.

After a thorough review of the above listed document, it is our opinion that Alternative A is a better overall alternative than the Preferred Alternative for the following reasons:

1. Alternative A would enable the Park Service to better serve the needs of the increasing number of park visitors by "improving access, by upgrading or building trails, designating new routes and adding picnic areas, interpretative facilities and back country campsites".
2. Alternative A would still leave plenty of "pristine" area for use by those who desire a "purist" type of wilderness experience.
3. According to Table #5, pages 101-107, this alternative "would provide opportunities for more widespread and increased use of the park while still protecting park resources". It would also provide moderately improved opportunities for solitude in most areas and a number of additional opportunities for visitors to enjoy the park's proposed wilderness, including Parunuweap".
4. If the Park Service is truly committed to serving the needs of a majority of its visitors while at the same time protecting resource values, we suggest that Alternative A be the preferred alternative.

1 We do have a serious concern with the proposed group size limits for recreation stock use in the Primitive Area. It is our opinion that the proposed limit of 8 people and 8 horses combined is neither essential nor practical. According to this limit, a family group consisting of two adults and three children on horses would not be able to use any of the trails in their Primitive Area. Certainly a family of five people is not that unusual, and if you consider that if they wanted to take a pack horse in order to stay over night, the restriction becomes even more unreasonable. We find nothing in the EIS the indicate that pack and saddle stock use has been a serious problem in the area. We, therefore, would like to suggest that the group size limit should be the same as those established in Capitol Reef National Park and the Grand Staircase-Escalante National Monument, namely 12 people and 12 riding or pack stock. Since the topography and many other characteristics of these two areas are very similar to Zion we see no reason why the group size limits should not be the same. Recreation stock use has been one of the historical uses

Back Country Horsemen of Utah, Chairman, Public Lands

1. See response 2 to the Backcountry Horsemen of Utah, Chairman, Public Lands.

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1. in the back country of the Western United States and we find that if properly managed they can be a significant attraction for visitors that are seeking an opportunity to see a symbol of the old west still being used to serve a useful purpose.

2. In addition to our concern over the group size limit we would also like to suggest that all trail heads that are to serve recreation stock users be designed and constructed in a manner that will facilitate the parking of pickups pulling horse trailers and a dumpster to encourage users to clean up.

3. Some of our members who are intimately familiar with the Park and the trail systems have also expressed some concern about the apparent plan under the Proposed Alternative to eliminate all off-trail use by recreation stock in the Coalpits Wash, Haber Wash, Scoggings Wash and the Crater Hill areas. Following a review of the Plan and EIS it appears to us that the primary reason for not allowing off-trail horse use in these areas is because of the plan to zone this a Pristine Area. If it is currently being used by horsemen and was formally used by the Park personnel when they still had horses, how can you justify zoning this area as a Pristine area? In the comments submitted to you by these same members they also indicate that there are also some additional trails that would be closed to recreation stock use under the Proposed Alternative. If this is in fact the case, we would like to ask you to defer any formal closure in these areas pending a joint on-the-ground inspection to hopefully reach a meeting of the minds on this issue.

4. After our review of the plan and EIS, we get a distinct impression that the overall justification for many of the proposed restrictions aimed at recreation stock users is based on the assumption that they will be needed when the area is eventually designated a formal wilderness. If this impression is correct, we would like to remind you that recreation stock use has been authorized and accepted in the majority of wilderness areas since the inception of the Wilderness Act of 1964.

One of the basic goals and objectives of Back Country Horsemen of America, which consists of thousands of members nationwide, is to work with and support the various land management agencies in an effort to protect the natural resources in a manner that will also preserve the recreation stock users right to use the public lands. This we strive to accomplish through user education programs and a common sense approach to land management. We stand ready and willing to cooperate and assist you wherever we can and we hope that our concerns will be given serious consideration.

RESPONSES

2. We believe the trailheads where saddle stock are permitted are sufficient for access.

3. See responses 1 and 2 to Backcountry Horsemen of Utah, Chairman, Public Lands.

4. The plan recognizes that horse use is a traditional activity and specifies that this use continue. The actions proposed in the draft plan were intended to ensure that the park's resources are not impaired in the future. There was no intent to eliminate horses from recommended wilderness, nor does the Park Service believe that horse use is incompatible with wilderness.

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COMMENTS

RESPONSES

One final comment: Upon reviewing the list on pages 207-209 of agencies and organizations that received this document, we were surprised to find no mention of Back Country Horsemen of Utah. In as much as our parent organization (BCHA) has a Memorandum of Understanding with the National Park Service to provide a general framework of cooperation, we would like to have our name placed on your mailing list for any future items relating to recreation stock use. Our mailing address is:

Back Country Horsemen of Utah
P.O. Box 13195
Ogden, Utah 84412-3195

Sincerely,
Jack Prescott
Chairman, BCHU

Upon review and inspection of the Proposed Management Plan and EIS for Zion National Park, we, The Uintah Basin Chapter of the BCHU agree with these thoughts, ideas, concerns and sentiments. We too, would like to see certain parts of Zion National Park kept open to a reasonable group number of recreational stock users.

Sincerely,
Gale Robbins
President Uintah Basin BCHU
Alan Oleen
Vice President Uintah Basin BCHU

Gale Robbins
robbs@zealink.com
(435)789-0822
1268 N 1500 W
Vernal, UT 84078

Alan Oleen
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(435)789-4321
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Vernal, Utah 84078

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Organizations

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COMMENTS

Back Country Horsemen
Of Utah

Kent Thurgood
President Washington Co. chapter
14 W. Canal Drive
Brookside, Ut. 84782
Jan. 20, 2000

Mr. Eddie Lopez
Asst. Superintendent
Zion National Park
Springdale, Ut 84767

Dear Mr. Lopez,

Thank you for the opportunity to meet with you today. We appreciate the privilege of representing our national organization in the agreement with the National Park Service. We trust that we will be able to earn your confidence as an organization which can assist you in teaching "Leave No Trace" horse use within our park so that this wonderful opportunity can be maintained for generations of the future to experience.

The following points summarize our main concerns with the proposed plan:

- | | |
|---|---|
| 1 | 1. The general feeling in the wording seems to be biased against the use of horses in the Park. We would hope that could be corrected in the final draft. |
| 2 | 2. The word "may" as used in the definition of horse use in the primitive areas could be in the final draft will use "shall" in order to clarify the intent which we understand from you and Superintendent Faivry. |
| 3 | 3. The arbitrary figure of four as the maximum number of stock allowed in a party is far too restrictive. There are many of us with families larger than that. We would hope that it could be eight, which is what your current brochure on stock use states. |
| | 4. Perhaps leaving the number open under the condition that members of the group take Ghost Rider Leave-no-trace Training. |
| 4 | 5. We would like to see more of the land designated as areas for off-trail use. |

Sincerely Yours,

Kent Thurgood
Kent J. Thurgood,
President

RESPONSES

Back Country Horsemen Of Utah, Washington County Chapter

1. See response 2 to Backcountry Horsemen of Utah, Chairman, Public Lands.
2. We have revised the wording to state that horses would be permitted on designated trails and at designated times. We do not feel the word "shall" is appropriate because we may not always permit horse use in a given area due to resource concerns and/or conflicts with other visitors. This is true for all uses in the park.
3. See response 2 to Backcountry Horsemen of Utah, Chairman, Public Lands and response 16 to Washington County.
4. See response 1 to Backcountry Horsemen of Utah, Chairman, Public Lands.

CONSULTATION AND COORDINATION

COMMENTS

RESPONSES

To whom it may concern,

In regard to the proposal to reduce the group size for stock users in Zion National Park, the Bridgerland unit of the Back Country Horsemen of

1 America/Utah, does not support the number being reduced to four. Four is not an acceptable number to us because, if a family of four people from Cache Valley were to want to go on an overnight camping trip in the park, they would be unable to do so. Obviously a family of four would need four riding animals, and at least one pack animal to make the trip, the size limitation would not enable them to camp or travel together. A family of four is not an uncommon number, and if they cannot ride or camp together, then they will look for somewhere else to go. It makes us wonder if that is the intent of the group size reduction anyway, to eliminate stock use in the park.

With that said we support the Back Country Horsemen of Washington County, the local unit, and urge you to listen and work with them to achieve a manageable number.

BRIDGERLAND BACK COUNTRY HORSEMEN

Blake Pulsipher

Blake Pulsipher
President 2000

10/10/00 7:30 AM
10/10/00 7:30 AM

Bridgerland Backcountry Horsemen

1. See response 2 to Backcountry Horsemen of Utah, Chairman, Public Lands and response 16 to Washington County.

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COMMENTS

RESPONSES

TO: Darla Stiles
Park Planning Coordinator
Zion National Park
Springdale, Utah 84767-1099

To Park Planner and Park Superintendent,

February 25, 2000

Our Canyon Country 4 x 4 Club membership appreciates the opportunity to comment on the proposed Zion Park General Management Plan as we realize the importance of a plan that is projected to cover a twenty year period.

1 The Plan suggests negative impacts regarding roads without providing any basis. The Plan suggests road building and grazing may increase sediment. (p.112) A study comparing natural sediment transport and vehicular sediment transport and the effects of each is necessary before vehicular access is unnecessarily restricted. Mitigation is recognized in the Plan as part of planning regarding other impacts. Should it not also be considered if vehicular access were documented to cause impacts on the park rather than only restricting or eliminating vehicular access?

2 On page 24, the Plan would "permit vehicle access to private land on existing roads" and would not seek to acquire private lands, "as long as these lands are devoted to compatible use."

What legal standard exists for these two statements? Does the private property ownership and access easement predate the Zion's Park? Would the park enact condemnation through eminent domain and acquire the lands through due process and just compensation? The basis for such statements is?

3 What is the basis for the park plan to designate categories of land that are more restrictive than Wilderness designation? Will Congress give the Secretary of Interior the authority to exceed congressional land management designations?

4 The draft plan has not provided a basis or documentation to justify severely restricting access to 83% of the park. Protection has been emphasized in the plan at the expense of access by the majority of park visitors without justification for severely limiting access. This error needs to be corrected or justified with better documentation and study before the plan is enacted.

5 What legal basis does the plan have to close SR 9 at anytime? Is SR 9 a state easement route through the park? SR 9 is a very important route for property owners and local citizens to access from one community to another. If the Park Service has sole legal claim to SR 9 that basis should be stated in the plan.

6 The plan did not mention the NEPA requirement that the plan be consistent the local government planning. What efforts were made to meet this requirement? The references

Canyon Country 4x4 Club

1. See response 27 to Washington County.
2. See responses 22 and 23 to Washington County.
3. See "Clarification of Commonly Raised Public Concerns," concern 6.
4. See response 4 to the Kane County Commission and "Clarification of Commonly Raised Public Concerns," concern 10.
5. See response 1 to the Kane County Commission and "Clarification of Commonly Raised Public Concerns," concern 1.
6. Conflicts with local land use plans has been added as an impact topic in the final document.

It should be noted that NEPA requires that an environmental impact statement discuss possible conflicts between the preferred alternative and land use plans and the extent to which the agency would reconcile the conflict. However, NEPA does not require that the *General Management Plan* be consistent with local land use plans.

7. See response 3 to the mayor of Virgin regarding the economic impacts. In response to the rest of your comment, no special effort was made to coordinate the economic impacts with local governments. However, the draft plan was sent to local governments, which had the opportunity to comment on the document. The local governments that responded did not dispute the economic impacts section.

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RESPONSES

7. to local economy seem to be based on conjecture rather than study. Were the economic impacts coordinated with local governments? If so to what extent?

8. Many aspects of the plan indicates that the planning effort was developed primarily to protect Zion Park from visitors and that the public participation and local government coordination part of the plan was done to minimally meet the legal requirement. Can you give us some indication that this is not the case?

Thank you for letting us share concerns that are very important to our membership.

Canyon Country 4 X-4 Club

Land Use Representative

Mark Habbeshaw

326 S. 7800 East

Kanab, UT 84741

8. See responses 1 and 20 to Washington County, response 4 to the Kane County Commission, and response 2 to the mayor of Virgin.

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COMMENTS

RESPONSES

CONSULTATION AND COORDINATION

Friends Of Zion
P.O. Box 68025
Nashville, Utah
84705

February 29, 2000

Superintendent Fisher
Zion National Park
Springdale, Utah 84767

Dear Dan,

In response to the release of the 1999 Zion National Park Draft General Management Plan a group of citizens came together to consider the document and offer our collective concerns about the direction and future of our favorite national park, Zion.

As residents of local communities, we have made a commitment to this place, a place for which we feel a special reverence. Zion is the heart of a larger whole which becomes more endangered each day. Together, we have walked its trails, climbed its mesas, and been restored by its soothing waters.

We support the park in its efforts to manage national park lands and wilderness to preserve the wondrous values and sense of place that flows from this redrock canyon. To that end we offer the following comments:

Thank you for your consideration. Please add us to your mailing list for future planning documents.

Sincerely,

Greg K. Chisler
Greg K. Chisler
Scribe for the Friends

Friends
dedicate to the Order
Zion Ecogroup

Friends of Zion

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Friends of Zion

Zion DGMP Comments

February 2000

Comments on Zion National Park Draft General Management Plan, February 29, 2000

We are quite lucky this draft is coming out now because we have the chance to make a great impact on the future of Zion National Park. And even more fortuitously, it appears Zion is in the enviable position of being under the care of a new, insightful and forward-thinking Director of the Intermountain Region, Karen Wade.

We are quite impressed with Ms. Wade's Commentary in the 1999 issue of *Forum*, the publication of the George Wright Society. In her article she describes a vision that is especially exciting for Zion—a park extremely challenged by rapid development and growing demands for unlimited use.

Unfortunately, the *Zion Draft General Management Plan* seems to have lost sight of the reason for national parks and of the visitor experience national parks are mandated to provide. Missing is the Organic Act's definitive mission: we hope it will be a beacon in the plan's re-vision:

"... conserve the scenery and the natural and historic objects and wild life therein and to provide for the enjoyment of same in such manner as will leave them unimpaired for the enjoyment of future generations."

Friends of Zion wants to help create a document that adheres to and champions this original idea; a document with a unified vision—an inspired, innovative, and, dare we say, passionate

commitment to the protection of the spirit of place, this place, the sacred landscape and values of Zion National Park.

Friends of Zion challenges the National Park Service to create from this unfocused draft a science-based management plan that will, for the first time, adequately address serious current impacts to park ecosystems and will provide a range of increasing protection to critical natural and cultural areas. Important steps to this end can and should be taken immediately, without huge budget or staff increases.

- Our members also want to see real management instituted in Zion's Recommended Wilderness so that natural and experiential resources, such as wilderness character and value, are extended full protection of the law.
- Friends of Zion also encourages a document that will provide a healthy "national park" visitor experience. Rather than memories of wading through an incessant and completely structured trip filled with mandatory visitor center visits, compulsory shuttle transportation, and crowded hiking on deteriorating trails, we want visitors to lounge along a sparkling, free-flowing Virgin River, to hear the spirited notes

COMMENTS

RESPONSES

Friends of Zion

Zion DGMF Comments

February 2000

of canyon area, to sink into the memory of the wild, and to know their national park is being managed to protect the very resources and experiences they come to witness and enjoy.

• Regrettably, the ZDGMF is based on worn-out ideas that haven't worked in any park, and that, in fact, have lead parks into the difficult situations they now face.

• The plan's inappropriate focus on the hours of problem solving rather than on a unified and strong vision of protection give the public no real idea of where Zion is going, how issues and controversies will be handled, or what Zion is about.

• Further, all alternatives, as written, are unrealistic due to their timeline, unrealistic budget, and complex, convoluted "solutions" which neither achieve the park service mission nor the plan's stated Desired Conditions.

Thus, it is with great gratitude and hope that we read in Ms. Wade's article the following guidance:

"We can wait for the new money and wait for top-down directives, but now is the opportunity to transform the way we manage the national park and the way the public views its responsibility to them. It's not Washington's responsibility—it's ours. That responsibility is twofold—stewardship and education."

"The Congress and the Federal courts have consistently told us that our first priority must always be to conserve, and to provide for visitors within that context. The Challenge is about making the commitment to resource preservation so that parks will always have unimpaired resources for future visitors to enjoy. That commitment to preservation means that sometimes we'll need to prepare our publics for hard choices, and that we'll have to face political pressure which wants more development or accommodation at the expense of [preservation]..."

"We [the National Park Service] have not done, however, a very good job of educating the public about what it takes to keep park ecosystems functioning in an increasingly fragmented landscape."

"Our commitment to natural and cultural resource inventory, monitoring, and the use of scientific/scholarly information to support management decisions is required by the 1996 Thomas Bill."

"We can and must consider the resources first in each and every decision we make as park managers. That doesn't require any more money or staff than we have now."

Friends of Zion champions Director Wade's innovative and courageous vision for reinvigorated national parks.

Unfortunately, none of the direction Ms. Wade so eloquently sets in her article is mentioned in the ZDGMF, nor,

CONSULTATION AND COORDINATION

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COMMENTS

Friends of Zion

Zion GDMF Comments

February 2000

equally as troubling, are NPS Management Policies 2000 and the Director's Orders and Reference Manuals. Luckily, the Zion General Management Plan is in DRAFT, and can be infused and re-visioned with the enthusiasm, hope and positive direction so clearly stated by Director Wade.

We know this will involve hard choices, but if these difficult decisions aren't made now, they will be impossible to make after 20 years of continued development, visitation, and compromise. Guiding Zion—and all national parks—into the future will take innovative and committed leadership on the ground and unwavering support from Regional and Washington offices.

Ms. Wade will also have the chance to make a profound difference at Zion National Park by her choice of a new superintendent. We encourage the choice of a superintendent who meets her evaluation of a good example, a superintendent who will focus on "scientifically sound natural resource management programs without huge base increases," and who will make "science-based resource management their priority because they needed to have the facts on their side when they went out into the public arena to defend their parks from new threats."

The astounding costs associated with the given alternatives can be greatly lessened by eliminating the overburden of costly

building and road projects, expensive in-park housing, increased shuttle services, etc., etc. Staff costs hopefully will rise to provide scientific-based information, visitor resource interpretation, skilled and tempered law enforcement, educational wilderness patrols, and sensitive restoration. Costs for staff training including innovative resource management, conferences covering the latest conservation ideas and methods, compliance, wilderness management, and partnerships will hopefully rise as well. The costs of moral support and creative, inspired direction from Regional and Washington offices are inestimable and priceless.

Thus, Friends of Zion offers:

- A vision statement for Zion National Park;
- Comments on the draft plan.

Friends of Zion formally requests that the National Park Service produce a second draft of the Zion General Management Plan that incorporates Karen Wade's vision, and includes ideas compatible with the NPS mission, current management policies, the latest science, and resource conservation methods. With hope Zion National Park will become a shining star in Ms. Wade's constellation of parks and a role model for all national parks.



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RESPONSES

Friends of Zion

Zion DMAP Comments

February 2000

A Citizen's Vision for Zion National Park

Snowmass. Zion. The Virgin River. These words ring in our imaginations like invocations. Cougar Mountain. Wilderness. Angel's Landing. We come to Zion hoping to find that which we can find nowhere else. And, invariably, we do; something hidden in a cool side canyon, in the sprinkled notes of canyon wren, in canyon's redrock glow. Places that, once seen, linger in our souls forever. Later, while the world spins in its hurried rush around us, a vision of cool water splashing over desert rock will come when we least expect it. And we revel in the idea that such places still exist. *River's Magic. Wild Canyon. Joy.*

Zion is a place of the wild, here the Colorado Plateau merges with Basin and Range and the Virgin River links forested mountaintop to arid desert. Zion's protected lands are not only a marvelous wilderness, but are also imbedded in a vast network of Federal lands which provide a chance to manage Zion's unique ecosystems as part of a whole.

From Zion's seen resources rise the unseen. The sublime radiates from intact biotic processes percolating beneath our feet, from unimaginable geologic process humming through unknowable time, and from the sense of place that comes with well-nurtured human roots. This place is sacred not only to the native cultures for whom it is an original home, but also to a

growing global constituency. Millions of people seek sanctuary in Zion's essential spirit and find solace in knowing this wondrous place is managed to nurture the ever-diminishing natural systems on which we all depend.

The park's vision and mission is easily summarized: Zion's first priority is to preserve resources and provide for visitors within that context.

To protect Zion's tangible and intangible beauty, the park will institute science-based management to preserve ecological processes and historical, cultural and experiential resources. Recommended wilderness both in and adjacent to Zion will be managed as wilderness and the Minimum Requirement Decision Process will govern all actions therein. Wilderness decisions will be made in anticipation of eventual designation. Adaptive reuse of historic structures will be encouraged, and the cultural landscape's historical integrity will be preserved. Cultural resources will be guarded from all impacts, and formal government-to-government relationships will be established with park-affiliated Tribes.

Visitor use will be carefully managed to ensure diverse opportunities—from wilderness solitude to structured social situations—while accomplishing the park's primary responsibility of resource protection. The unique qualities of each park area will be preserved and restored to allow differing visitor opportunities. All

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Friends of Zion

Zion OCMF Comments

February 2000

interpretive/educational themes will be represented in the most appropriate locations and manner to educate visitors with diverse interests and backgrounds. Interpretive efforts will inform the public of the park's primary role as caretaker of delicate ecosystems in an increasingly fragmented landscape. Information will explain visitor use management strategies and resource sensitivities, respond to visitor needs, and guide visitors to recreational opportunities offered in the region.

Development inside the park will be kept to the absolute minimum. Housing, office space, and some visitor needs will be located outside the park. Any project will be carefully scrutinized to insure it is necessary and appropriate, meets minimum requirements, and cannot be accomplished outside the park. Appropriate NEPA documentation and analysis will be completed on all in-park projects, and adequate public scoping and notification will occur on a regular basis. Necessary development will be a model of excellence in

planning and management, compatible with the historic setting and architecture, energy efficient, and include alternative energy sources. Development will be permitted only to preserve park resources and values.

The park will work with surrounding entities to plan and manage actions in the larger Zion complex. Partnerships with NGOs and other agencies will implement ecosystem management and establish a regional system of core protected areas and connecting corridors. A range of increasingly protected environments will include Research Natural Areas and closures where deemed appropriate by science-based management. Regional planning will ensure concepts developed through scientific research and cutting-edge conservation biology are linked to adjacent areas. The defined visitor experience on park lands will be matched on adjacent lands.

Zion's first priority will always be to preserve and provide for visitors within that context.



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COMMENTS

Comments on the Zion National Park Draft General Management Plan
 Table of Contents
 Version 1.000

Comments on the Draft Plan

Friends of Zion feels significant oversight necessitates a second draft of the Zion National Park General Management Plan. We comment here on specific actions listed in the plan though we feel these actions are too specific for a General Management Plan without a central vision or without visions for each area.

General

1. Alternatives are based on an incorrect assumption. NPS Policies (both 1988 and 2000) require all wilderness areas be managed as wilderness until Congress acts. The alternatives are invalidated since management actions proposed in each are based on omitting areas from wilderness boundaries.
2. The plan presents an inadequate range of alternatives limited to (a) develop, (b) don't develop, or (proposed) do what the NPS wants. The given alternatives are conglomerations of mismatched ideas (as in the resource-focused alternative that proposes four new visitor facilities in the park's remote areas).
3. Wilderness management is neither included as a Primary Planning Issue or Concern nor listed under Direction for the Plan - Purposes, Significance, and Mission Goals for ZNP.
4. There is no overall vision. The plan reads as if written by authors who never discussed how their separate works would be incorporated into a sound whole. The plan's draft status allows creation of a new, innovative and dynamic document.
 - By carrying "old think" into a new future, the plan is already obsolete.
 - The plan needs re-visioning and the inclusion of Management Policies 2000, new Director's Orders and Reference Materials, and a commitment to resource protection over visitor use.
 - There is no innovation, commitment to the spirit of place, or adherence to the national park service ideal.
 - The plan provides unlimited visitation to the detriment of park resources.
 - The alternatives neither address the stated Desired Future Conditions or incorporate listed strategies.
5. The plan needs defined visions for each area, i.e., Lava Point, Kolob Canyons, Kolob Terrace, the East Side, Panguitch, and Zion Canyon.
6. There is no mention of ecosystem management or of the park in a regional context.
 - Spreading use rather than controlling it is irresponsible, and poor management policy.
 - Alternative's resource actions should be common practice, not an alternative.

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RESPONSES

1. The text in the draft plan has been modified to address this comment. See the response to "Clarification of Commonly Raised Public Concerns," concern 13.
2. We disagree with your categorization of the range of alternatives. The alternatives included a series of interrelated actions, strategies, and approaches for managing the park. Each alternative has a slightly different focus and addresses in differing ways visitor use, the levels and types of park development, management of the Zion Canyon Lodge and the North Fork of the Virgin River. The three action alternatives also addressed park boundary adjustments and proposed wild and scenic river designations in the park. Although the planning team started out with more management alternatives, as indicated in appendix E, the planning team narrowed the range based on the advantages of the alternatives relative to each other, the lack of major differences between the alternatives, and public responses to the initial range of alternatives. We believe the four alternatives in the draft and final plan reflect an adequate range of alternatives that address the major concerns and views that were expressed by park staff, other governmental agencies, organizations, and individuals during the planning process. With regard to alternative B, we are not aware of which four new visitor facilities you are referring to being built in remote areas. Only minimal new development was proposed in the park under this alternative, all which occurred in nonwilderness areas.
3. Wilderness management is identified in the final plan as an issue to be addressed in future plans. It also is discussed under "Park Policies and Practices."
4. An overall "vision" for the park, which includes the front and backcountry, has been added to the preferred alternative in the final plan.
5. The management zone descriptions outlined the desired conditions (i.e., vision) for these areas. See appendix D for detailed descriptions of the zones.
6. A direction on ecosystem management has been added to the "Park Policies and Practices" section of the final plan.

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COMMENTS

Comments on the Zion National Park Draft General Management Plan
 Volume 1 of 2
 January, 1990

- 7
- There is no mention of how the park will modify visitor's potentially damaging behavior. The plan seeks to limit impacts by changing use patterns, but without changing visitor behavior, these actions are useless.
 - There is no plan to guide users to similar activities/states in the region.
 - Setting visitor and horse group sizes without mentioning supporting research or implementing VERP seems premature. Group sizes hardly matter when 1500 people crowd the Narrows every day. Since the VERP process has taken over ten years at Canyonlands, strict interim use limits are needed in places like the Left Fork of North Creek until VERP is completed.
 - The number of issues deferred to possible future plans leaves Zion without interim guidance or clear direction to solve current problems.
 - There is no realistic implementation timeline or budget.
 - How does Zion's Five-Year Strategic Plan fit into this document?
 - If the nine plans mentioned took two years each to write and approve, it would take 18 years to finish them, which is beyond the life of this GMP.
 - Since the plan is not science based, huge assumptions are made about impacts.
 - There is no mention of the park's vision for people with disabilities.
 - Defined objectives for each developed area would allow Zion to manage for differing experiences.
 - Few of the plan's actions withstand the test of ZNP's purposes and mission goals as listed on page 7.
 - There is no analysis of the cumulative impacts of the multitudinous actions proposed.

Comments by Subject Area

Wilderness

- 8
- We do not believe it is permissible to omit areas from the park's original Wilderness Recommendation before Congress has acted. Please provide the policy or law that allows this wilderness deauthorization.
- 9
- The plan does not mention or define the Minimum Requirement Process which, according to DCO #41, must be used to determine what's allowable in wilderness.
- 10
- Any incursions into original wilderness and impacts on suitability must be removed and restored.
 - Wilderness acreages and percentages do not match.
 - Zion Wilderness is Recommended not proposed, a significant difference.

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RESPONSES

7. Use limits are in place for the Left Fork. We agree that interim group size limits are needed elsewhere. The final plan notes that group size limits and encounter rates for hikers in the primitive and pristine zones and for saddle stock users in the primitive zone are interim limits, which will be reviewed in the wilderness management plan and carrying capacity studies. The park's highest priority implementation plan is the wilderness management plan. The wilderness plan and the carrying capacity studies will be completed within five years of approval of the GMP. See also response 2 to the Kane County Commission regarding hiker group sizes and response 16 to Washington County regarding horse group sizes.

With regard to issues being deferred to future plans, we believe existing laws, NPS policies, and park policies and practices provide sufficient interim direction. If any issue becomes pressing before a future implementation plan is finished, park managers will take appropriate action.

8. See response 1.
9. The text has been modified in the final plan to address the minimum requirement process. Specifically, the section on wilderness management in the "Park Policies and Practices" outlines the process.
10. All of the alternatives now are consistent with the 1978 wilderness recommendation except for changes that reflect the acquisition of private inholdings, state surface ownership, mineral rights, grazing rights, and water rights. No developments are being proposed in the recommended wilderness area. All wilderness acreage and percentage figures have been checked in the final plan and are consistent. And the term "proposed" wilderness has been replaced with recommended wilderness. See also "Clarification of Commonly Raised Public Concerns," concern 13.

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COMMENTS

Comments on the Zion National Park Draft General Management Plan
 Draft of Zion
 February 2000

- Since wilderness management is not based as a guiding principle, this plan does not represent a serious attempt to manage wilderness.
- Include Director's Order and Resource Manual #41 direction and implement framework in this plan.

11. Zoning that lessens wilderness character is not appropriate. Friends of Zion does not believe the primitive zone as defined provides a wilderness experience or preserves wilderness character and values. Transition and Administrative Zones in wilderness are inappropriate.

- Picnic tables (prohibited in Wilderness) on Sand Bench Trail must be removed.
- There is no mention of managing for "wilderness condition."
- All alternatives state that park lands will "continue to be managed as wilderness." Since they are not now managed as wilderness, we hope this means a new policy will be implemented.

12. Any new trails, campsites, facilities, or use of actions prohibited in wilderness must be evaluated through the Minimum Requirement Process and the minimum tool selected and used.

- Visitor numbers in wilderness that exceed wilderness standards should be reduced.

13. Parking areas, as indicated on all alternative maps, are not permitted in wilderness.

- Where are LACs based on VERP?

14. "With final of Zion proposed [sic] for wilderness designation, the park service also needs this new plan to address how this designation will affect park management (e.g., changes in park zoning)." Wilderness is wilderness and doesn't need additional zoning to make it so.

15. According to DO #41, the Minimum Requirement Process cannot be delayed until a park's Wilderness Management Plan is finished. Since MRP processes require NEPA and public comment, it would be wise to outline the process in this plan.

- The proper wilderness management and retention of original wilderness is of primary importance to CO members.

Guide Services in Wilderness

16. The decision to open wilderness to "limited NPS or NPS-sanctioned guided interpretive trips" is subject to the Minimum Requirement Process (MRP). All guiding actions would be subject to the MRP to determine minimum tool.

- The park's commitment to management of future guiding is in questions when the park knows of but doesn't control current illegal guiding.
- Allowing guided tours creates unnatural demand. The park draws attention to little-used areas by offering "special" tours, thus generating demand that wouldn't otherwise exist.

RESPONSES

11. We agree that zones should not lessen the character of wilderness and that the administrative zone is not appropriate in wilderness. However, we believe that the primitive zone description is consistent with the definition of wilderness — the lack of signs of people, little development, group sizes, and encounter rates in the primitive zone are all consistent with how many other wilderness areas are managed. With regard to the transition zone, we generally agree that this zone is not appropriate in wilderness. However, in the preferred alternative in the final plan three areas designated as transition zones — the Timber Creek overlook, the Narrows from Orderville Canyon south to Mystery Canyon and the Observation Point trail — lie within the recommended wilderness area. These areas would be managed as "special" transition zones: management in these areas would be consistent with wilderness, although use levels would be permitted to be higher than in other zones in the wilderness area. Again, we believe this is not inconsistent with how other wilderness areas with high use levels are managed (e.g., the Mount Rainier, Alpine Lakes, and Grand Canyon Wilderness areas). See also response 2 to the Southern Utah Wilderness Alliance.

12. We agree. However, no new facilities in the preferred alternative are in the recommended wilderness area. See also response 9.

13. We agree and have modified the alternative map to remove all parking areas within the recommended wilderness.

14. We agree that a new plan is needed due to the wilderness recommendation and noted this on page 4 of the draft. See also response 11 and response 2 to the Southern Utah Wilderness Alliance.

15. See response 9.

16. Guiding in the recommended wilderness area would be addressed in the future wilderness management plan, utilizing the minimum requirement process and NEPA. See also response 9.

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COMMENTS

Comments on the Final Revised Final Draft General Management Plan
 Friends of Zion
 February, 2000

- Friends of Zion members do not support guide services in the park's Wilderness areas.

Opening Parunuweap Canyon

• Why?

- 17
- During the public meetings, the only pressure to open Parunuweap came from the guides who would profit from it.
 - It has recently come to our attention that numerous scientists supported the Parunuweap closure in a previous study. Why is this information not mentioned or incorporated?
 - Since Parunuweap is within a recommended wilderness, any changes to the closure must undergo the Minimum Requirement Process.
 - Since the Environmental Analysis of opening Parunuweap Canyon is totally inadequate, a separate NEPA document must be prepared for decisions affecting this canyon.
 - What science recommends reopening?
 - What access will be provided into Parunuweap? No easements or acquisitions are mentioned.
 - Guides generate demand through advertising where there was none. Does Zion really want to get into the business of managing waiting lists, holding lotteries, and monitoring concession operations? It would seem the park has plenty to do without opening this unclassifiable Pandora's box. Count your blessings and just say no.
 - Why are Parunuweap group size limits larger than those for wilderness pristine or primitive zones?
 - Parunuweap Canyon must be considered in a regional context. The same recreational experience is available in thousands of other canyons throughout the Colorado Plateau. But only one canyon in all of the Southwest is set aside for full protection and future research: Parunuweap. What an incredible gift the NPS is giving to the future—a canyon unlike any other—one which will guide the restoration of those thousands of other canyons.
 - Many of our members (long-term local residents) and most of the board have hiked Parunuweap, and we can report that it is indeed a beautiful place. Although we would all like to hike there again, we are willing to sacrifice our personal desires to the greater good and noble idea of preservation.
 - The retention of the Parunuweap Canyon closure is of primary importance to CO members.

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RESPONSES

17. We agree with many of your points. As noted in the introduction to this part, after reviewing public comments, the zoning and management of Parunuweap have been changed in the final plan. Parunuweap and upper Shunes Creek above the diversion would be designated as a research natural area. References to guided trips have been dropped, although NPS-led educational groups would be permitted in this and other research natural areas.

Organizations

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COMMENTS

Comments on the Zion National Park Draft General Management Plan
 Fourth of June
 (January 2000)

Research Natural Areas

18. • Not enough information about RNA's for the public to make an informed decision
 • Who set them up and why?
 • Are they no longer natural? Suitable for research? Did the park ever manage them as RNAs? Why not?
 • Someone obviously thought these RNAs worth setting aside. GAMP does not provide any good reason to deauthorize.
 • What is the basis of new RNAs? Scientific recommendations, research, researcher requests, demand?
 • What are they set aside for? How will they be managed? What are the criteria for use? Who will have the responsibility for their proper management?
 • How do RNAs fit into regional context? How many others of these types exist? Are the Zion RNAs the only ones? If so, their value increases dramatically. Vile support a range of increasingly protected areas within Zion. If areas are open to full visitor use, a balance of fully protected areas is needed.

19. • How will Shutes Creek qualify as an RNA if the dam proposed by the park's last EA is built?
 • RNAs are of primary importance to CO members.

Naturalized Virgin River

20. • Vile support a naturalized Virgin River only if the park's response to flood damage does not incur greater damage, i.e., constant road rebuilding, bulldozers, etc.
 • What river period is the park managing for? Why? Where is the data/research that supports more cottonwoods?
 21. • Flooding is gained by removing current spring water structures. Vile do not support the building of a water treatment facility in the park.
 22. • Restoration will require NEPA analysis and public comment before implementation.
 • CO members recommend more pressing issues take precedence over the North Fork Restoration.

Zoning

- Friends of Zion does not support the zones as defined and delineated in the GAMP, since they do not provide wilderness experiences.
- Zones appear to be drawn to accommodate current use rather than define it.

RESPONSES

18. The draft plan identified the reasons why the existing research natural areas would be deauthorized on pages 10 and 62. There is little documentation regarding the reasons why these areas were originally classified as research natural areas, but they were typically chosen as representative vegetation. Additional rationale for deauthorizing the existing research natural areas is provided in the final plan. With regard to the new research natural areas, the discussion of research natural areas in the preferred alternative has been expanded in the final plan. More details are provided regarding the rationale for designating different areas as research natural areas. An appendix has been added that includes the attributes of each research natural area. The zone description describes how these areas generally would be managed. Regional context was not considered as a reason for designating the new research natural areas. However, they are believed to be generally rare to unique in the region.

19. The "Land Protection" section of the "Park Policies and Practices" chapter now states that the Park Service would work with water right owners to minimize impacts to park resources. Should the private water right on Shutes Creek be acquired, that area would become part of the Parunuweap Research Natural Area and water diversion structures would be removed.

20. The degree of disturbance to lands and facilities will vary depending on the restoration technique selected, from very little for benign neglect, to extensive for construction of a channel with natural characteristics. Outside the river corridor, disturbances can be expected on some portions of the road shoulder that have a high risk of bank erosion. The degree of continuing disturbance would be similar to past maintenance of the existing levees or maintenance of the current road upstream of the Grotto picnic area where the river is no longer channelized. Just as it is now, the need for such activities would be concentrated in the periods following large floods.

In reference to what time period the river would be managed, the river cannot be managed for a particular time period because natural processes, in particular fluvial processes are variable, cyclic, and progressive and, as such, cannot be locked in time. Rather, the river would be managed to support natural processes within the limits of facility protection.

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COMMENTS

Comments on the Zion National Park Draft General Management Plan
 Friends of Zion
 February, 1990

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- Areas should not be eliminated from wilderness due to overuse. The park should decrease use to retain or restore wilderness suitability.
 - We do not support cherry-stemmed trails out of wilderness.
 - Transition and administrative zones are not permitted in wilderness.

Zion Lodge

- 24
- Friends of Zion members support a research and education facility at Zion Lodge in some fashion, but find more critical issues take precedence over this costly conversion.
 - Friends of Zion realizes the lodge concession is now necessary to meet the needs of shuttle passengers and cannot realistically be removed. However, we encourage developing a research/education facility in conjunction with and paid for by the lodge concession.
 - For example, the lodge/research station could be run by a non-profit or cooperating association to provide for visitor needs, then channel profits into the research/education half of the operation. Housing and meals would be available for volunteer researchers, scientists on grants, visitors attending educational programs, etc. A laboratory could be constructed in one of the lodge units. Regular visitors might also use half the lodge for traditional stays. Or people might pay to help on projects like the Earth Watch program or Crow Canyon.
 - This conversion would eliminate the need to construct a research facility in south end of canyon, a facility we do not support building inside park boundaries.

BLM Lands

- Friends of Zion strongly supports the addition of BLM lands as mentioned in the plan, and supports their continued management as wilderness.
- Friends of Zion does not support bike use on park trails as is currently overlooked by the BLM on the Rockville Bench. Mountain biking opportunities near the park are endless; it does not need to occur in the park.

Access and Conservation Easements

- 25
- It is difficult to comment on proposed easements without a map delineating them.
 - Friends of Zion members do not support easements to provide easier access to the park's remote areas.

RESPONSES

21. It is estimated that the park diverts approximately 50% of the discharge of several springs to the potable water supply. A similar diversion of the Virgin River would constitute less than 2% of the flow. Eliminating spring diversions would restore natural flows downstream of the springs, permitting surface flow in several small tributary streams to extend further downstream and continue through a greater part of the year. A study of the water system alternatives would weigh these impacts and benefits against those of other alternatives.

With regard to building a water treatment facility in the park, that action was dropped from the preferred alternative in the final plan. The final document now states that the Park Service would examine alternative ways to obtain drinking water, including the procurement of treated water from Springdale.

22. We agree with your point regarding NEPA analysis and public comment. Current plans call for gathering an information baseline and seeking the input of experts in river morphology over the next year to develop reasonable alternatives, followed by a NEPA analysis and request for funding. This restoration is a high priority due to the continuing loss of overstory trees without replacement, the continuing loss of fish and wildlife habitat, the continuing loss of opportunities for visitors to observe a natural river system so rare in this country. Parks are directed to restore altered natural resources and to manage natural processes instead of features by NPS Management Policies.
23. No areas are being eliminated from the 1978 wilderness recommendation, nor are trails being "cherry-stemmed" out of wilderness. See responses 10 and 11.
24. As noted on page numbers 10, 11, and 43 of the draft plan, the lodge provides a unique historical visitor experience that adds to visitor enjoyment of the park. We therefore continue to support the existing lodge operation — we do not support converting part of the lodge to a research facility. At the same time, we also agree there is a need for a research facility. The final plan states under "Park Policies and Practices" that park managers would work with other governmental, private, and nonprofit organizations to explore locations within and outside the park for a research/environmental education facility and to find partnerships and funding sources for such a facility.

Organizations

COMMENTS

Comments on the Draft National Park System Management Plan
 Final of the
 January, 1991

- The improvement in environmental conditions does not appear to be appreciably greater or different from the No Action alternative. Why would this be the park's proposed action?
- This alternative lists the negative impacts of wilderness management and not the positive effects like the benefit of visitors experiencing a real wilderness in Zion instead of something we just call wilderness?

Alternative A

- Alternative A ignores the NPS's primary responsibility to protect resources first, thus A isn't a valid alternative. In none of the alternatives should resources be sacrificed to use.
- "Visiting opportunities in the backcountry could be expanded under alternative A." This would be a direct violation of wilderness policies without specific NEPA and MRP analysis and public comment.

Alternative B

- Page vi, "Alternative B focuses on providing increased protection for park resources while still providing opportunities for a range of visitor experiences." Isn't this the NPS mission?
- The resource actions proposed in Alternative B should be common practice, not an alternative.
- The following should be implemented under all alternatives including No Action, as elements of a strong NMP:
 - Reduce or eliminate negative impacts to:
 - Mexican spotted owl populations
 - Virgin scruboak habitat
 - Hanging garden vegetation
 - Desert bighorn sheep foraging areas
 - Air and water quality
 - Natural Quiet
 - Microbiotic soils
 - Riparian Communities
 - Why reduce shuttles in the main canyon? Manage the canyon for heavy use and leave the wilderness wild.
 - No mandatory Zion Mt. Carmel shuttles
 - No East Side facility. The back trail provides a range of visitor experience, i.e. high structure south entrance vs. more natural east entrance.

RESPONSES

would provide greater details on specific actions and quantification of impacts.

30. As stated in the document, the impact analysis was largely based on review of existing literature and park studies, information provided by experts within the Park Service and other agencies, and park staff professional judgements. The bibliography has been expanded to include a more comprehensive list of the references that helped provide the background material and information used in the formulation of the alternatives as well as the impact analysis.

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COMMENTS

Comments on the Draft National Park System Resource Plan
 Final of the
 January, 1991

- The improvement in environmental conditions does not appear to be appreciably greater or different from the No Action alternative. Why would this be the park's proposed action?
- This alternative lists the negative impacts of wilderness management and not the positive effects like the benefit of visitors experiencing a real wilderness in Zion instead of something we just call wilderness?

Alternative A

- Alternative A ignores the NPS's primary responsibility to protect resources first, thus A isn't a valid alternative. In none of the alternatives should resources be sacrificed to use
- "Visiting opportunities in the backcountry could be expanded under alternative A." This would be a direct violation of wilderness policies without specific NEPA and MRP analysis and public comment

Alternative B

- Page vi, "Alternative B focuses on providing increased protection for park resources while still providing opportunities for a range of visitor experiences." Isn't this the NPS mission?
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 - Microbiotic soils
 - Riparian Communities
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RESPONSES

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Comments on the Zion National Park Draft Resource Management Plan
Friends of Zion
February, 2000

- No new water treatment facility in the Park. Leave water devices at springs.
- No enlargement of Lava Point Campground.
- No East Side or Kolob Terrace Shuttle.
- No ranger station or employee housing at North Creek.
- Increased ranger patrols, rather than four new visitor facilities.
- Thou shalt not inflict interpretation. Range of frontcountry experiences.
- Closing the road beyond the lodge makes no sense.
- Build researcher facilities outside park.

*Comments by Area***Main Canyon**

- We do not support the building of any more facilities in the Main Canyon.
- No new water treatment facility in the Canyon.
- Buildings currently approved should be reconsidered for construction elsewhere.
- We do not support the building of recreational facilities for park and concession staff within park boundaries.
- Research facilities should be built outside the park or as part of a redesign of Zion Lodge.

East Side

31. Friends of Zion does not support visitor facilities on the East Side. To provide a frontcountry experience different from the main canyon our members recommend no new contact stations, picnic areas, pullouts, short nature trails (which, because of its proximity, would lead into wilderness).
- We do support increased ranger road patrols to deal with increasing resource impacts from increasing visitation.
 - It is unclear from the GAC's maps if the Friends of Zion Trail is in the park's original wilderness recommendation. If so, it should not be upgraded, signed, or heavily interpreted.
 - Rumors of possible East Side commercial development outside the park, if true, might lead Friends of Zion to accept a visitor facility located outside the park within the footprint of the development. We will also be sad to see the East Side's character so changed.

Kolob Terrace

- Current trails are consistent with wilderness. No need to remove.

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COMMENTS

Comment on the Proposed Park Draft General Management Plan
Lava Point
August, 1970

32. Friends of Zion members oppose any development near North Creek or anywhere else on the Kolob Terrace road. Ranger and maintenance facilities should headquarter out of Zion Canyon or Lava Point. Staff need to be quartered outside the park in existing towns.
- Adequate backcountry and frontcountry ranger patrols are encouraged.

Lava Point

33. Friends of Zion members do not support more development at Lava Point. It should offer a different, remote, and uncrowded experience.
- Additional employees may be needed in the future, but housing should be located outside the park.
 - Do not pave Lava Point Road.

Kolob Canyons

34. Development and expansion in the Kolob Canyons area is opposed by Friends of Zion members. Employee housing, administrative offices, and maintenance facilities should be moved outside the park.
- Should the need arise, we support limiting use rather than increasing services.
 - No campgrounds.
 - Unfortunately, in the Kolob Canyons area, visitors are greeted with housing and maintenance facilities rather than the astounding view. One residence is acceptable for the ranger on duty. There should be no water development to support facilities.

Other Facilities and Administrative Areas

- The park must control illegal guiding.
35. Parking areas, like those provided at the East Mesa Trailhead, East Rim Trail, and Crater Hill are not permitted in wilderness and must be removed.
36. Friends of Zion members do not support improving access to remote areas of the park like the trail to Slave Spring, rights-of-way through the Ponderosa, etc.
- The days of national park and/or concession housing in the park are, sadly, over. Move all new facilities, housing, and dormitories outside the park. Facilities could be located in Virgin, La Verkin or Hurricane, as they are in other progressive parks.

RESPONSES

32. The preferred alternative states that some new visitor facilities could be built along the Kolob-Terrace Road. We believe that improving trailheads and adding a few picnic sites in already disturbed sites — the only new developments mentioned in this part of the park — would not impair park resources and would provide more opportunities for people to enjoy this area. We also believe that building a new focused visitor facility/ranger residence on BLM lands near the park boundary at North Creek is justified. As noted on page 54 of the draft, this facility would serve several functions that would be much more difficult or impossible to provide via Zion Canyon or Lava Point. Establishing an NPS presence near this part of the park would help the Park Service better protect park resources and provide needed services for visitors.

33. The proposal to expand the Lava Point campground has been dropped. The preferred alternative now states that there would be no new development at Lava Point, except for the replacement of the existing ranger residence. Although we generally agree that employee housing should be located outside the park, in this case there already is an existing structure in this area. Replacing the Park Service residence in this part of the park would enable a ranger to continue to stay in this part of the park, and oversee the campground and picnic area, protect park resources, and provide services for visitors. (It also should be noted that another park ranger residence in the area at Firepit Knoll would be demolished once the new ranger residence/visitor facility is established on BLM land along the Kolob-Terrace Road.) Finally, there are no plans to pave the Lava Point road.

34. The preferred alternative now states that there would be no expansion of facilities along the Kolob Canyons Road other than the possibility of installing restrooms. The preferred alternative continues to state that additional administrative facilities could be built in the existing administrative area north of the entrance to support the increase in visitor services and facilities in this part of the park. (New employee housing, however, would be located outside the park.) This area already has been disturbed. It would be difficult to find a suitable location for administrative and maintenance facilities outside this part of the park.

35. The text has been changed to state that the trailhead/parking area at Crater Hill (Dalton Wash) would be removed because it is within the recommended wilderness area. No parking areas noted for the East Mesa

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Friends of Zion

Tuesday 28, 2006

Zion Draft GMP Comments

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**A Citizen's Proposal: Alternative Q
Resource Protection for Visitor Use**

To create it's Citizen's Alternative, Friends of Zion posed two questions

1. What does Zion really need?
2. What can Zion reasonably accomplish in 10 years?

So much of Draft Plan seems to be based on subjective opinion rather than science. No research, sociological studies, or even scientist's opinions are used to support the seemingly random application of RNA's, visitor services, or management in general. Although the Friends believe the Alternatives need to be totally rewritten from a different initial philosophy (of protection and science), we have used the plan's format to create a draft alternative for your consideration.

The plan also mixes actions that need to occur immediately with those that must by necessity be deferred until funding allows and with those which may never happen. It is difficult to understand exactly what the park is proposing for future management. We believe the Draft Plan is much too specific on items like, for example, removing water facilities from springs when there has been no research to support such ideas. Further, ideas like new picnic areas, new trails, new visitor centers are pie-in-the-sky until appropriate research, plans, and public comment has been incorporated. A GMP should be a vision document, setting the general course through the forest rather than planting trees.

This plan does not set in motion any specific guidance that can begin when it is approved. What will happen first? To what end and will decisions be made? The alternatives list possibilities, but no defined outcome and set no course to get there.

The emphasis of alternative Q is to preserve resources and provide for visitors within that context.

To preserve park resources, a science-based management program will address serious current impacts to park ecosystems, provide a range of increasing protection for critical natural and cultural areas, and protect park and wilderness values for the

inspiration and edification of this and future generations.

In park development will be kept to the absolute minimum, park offices, employee housing (both NPS and concession), additional maintenance facilities, etc., will be located in towns within a 30-minute drive. Management zones will provide a range of land protection from Research Natural Areas

At Q 1 of 8

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trailhead in the final plan because that parking area is outside the park. The existing parking area for the East Rim trail would continue to be maintained because the area is located outside of the 1978 wilderness recommendation. See also response 13.

36. Access would not be improved to the East Rim and East Mesa Trails. Rather, the action being proposed — acquiring an access easement through the Ponderosa Ranch area — would ensure that there would continue to be access to this part of the park.
37. The planning team reviewed alternative Q and compared it with the revised preferred alternative and alternative B. Although there are several specific actions proposed in alternative Q that were not covered in the draft plan alternatives, the major elements being proposed in the alternative are now covered in the revised preferred alternative and/or alternative B. No major differences distinguish alternative Q from the alternatives in the final plan. Thus, the planning team did not identify a need to add alternative Q to the range of alternatives being considered for the future management of Zion.

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Friends of Zion

February 28, 2006

Zion Draft GMP Comments

and wilderness to low- and high-use frontcountry areas.

Alternative Q and the proposed action differ primarily in the application of science for decision making, zoning schemes and zone-specific actions, wilderness management, and the philosophy of the Vision Statement.

ZONE-SPECIFIC MANAGEMENT STRATEGIES

The park will be divided into different management zones that identify different desired levels of increasing resource protection, differing social parameters and visitor use.

Zone Allocation and Related Actions

In alternative Q, the Zion Wilderness will be managed as wilderness. Zones in wilderness will not lessen wilderness mandates, values and conditions as required in NPS Director's Order #41, Wilderness Management. All actions in wilderness will adhere to the Minimum Requirement Decision Process.

Front-country high and low development zones, as well as transition, and administrative zones, will only occur outside Recommended Wilderness boundaries.

Frontcountry low-development zones will include the area along the Zion-Mt. Carmel Highway, the Zion Canyon Scenic Drive, the Kolob-Terrace Road, Lava Point, the Kolob Canyons Road and entrance, and the East Park Entrance. If high use development

occurs outside the East Entrance, a visitor contact facility might be considered for inclusion through the NEPA and public comment process. Such a facility will be constructed well outside park boundaries. Frontcountry high development zones will include the Visitor/Transportation Center and Zion Lodge.

Transition zones will never occur within Wilderness boundaries, and will include Canyon Overlook Trail, Hidden Canyon Trail up to the mouth of the canyon, the Riverside Walk Trail up to Mystery Canyon, and the road from Lava Point ranger residence to the West Rim trailhead. [It is difficult for Friends of Zion to determine if these areas were recommended as wilderness in the 1974 Recommendation. Any that were will be considered wilderness, not transition.]

Administrative zones will be limited to small areas around existing visitor contact facilities (Kolob Canyon entrance, Lava Point, the South and East Entrances, and Zion Lodge). The dry dump near Coalpit Wash will be removed and the area restored to natural conditions.

Any facilities proposed for Zion Canyon will be reconsidered for relocation outside the park.

Wilderness

The 1974 wilderness proposal is being modified to reflect acquisitions of several holdings. A spur road near Lava Point will be added to the Recommended Wilderness since it now meets suitability requirements.

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Friends of Zion

February 26, 2000

Zion Draft DGMP Comments

The East Rim and East Mesa parking lots and trailheads must be removed from Recommended Wilderness. (Friends of Zion cannot comment adequately on Wilderness boundaries since an accurate map was not provided in the DGMP.)

To meet required Wilderness conditions, park managers will need to limit current and future levels of visitor use on trails in wilderness.

No new trails or clearly delineated routes, upgrading of existing trails and routes, additional narrow unsurfaced trails or new routes will be established in Wilderness without completion of the NEPA and Minimum Requirement Processes.

Wilderness areas that contain critical resources may be closed to use (e.g., sensitive species habitat or areas of cultural sensitivity).

Designated campsites could be established outside of sensitive resource areas. If determined through NEPA and the Minimum Requirement Process to be the minimum action needed to manage wilderness as wilderness.

Water collection structures will remain at the springs in Zion Canyon to meet avoid the need to build a new water treatment facility.

The section of the North Fork of the Virgin River within the main canyon might be restored when a science-based study and following NEPA determines the correct course of action.

The park will restore the area beyond the Oak Creek maintenance area, including the

access road, to natural conditions, remove the road and other signs of human use, including the research camp (four tent pads), bonneyed items, maintenance equipment, and a nursery shed.

The park will remove signs and reroute social trails, campsites, natural and cultural resource damage, etc. throughout the Recommended Wilderness.

Research Natural Areas

Friends of Zion cannot adequately comment on Research Natural Areas since not enough information was given in the DGMP to make informed decisions, however, members fully support the inclusion of the park's southeast corner, all of Pariauwapp Canyon and all of Shures Creek (efforts should be reactivated to acquire the water right in Shures Creek.) until science-based research determines their eligibility. The Friends also supports including hanging gardens and isolated mesa tops since a large body of research in other areas proves their significance.

Management Zone Visitor Use Limits

Visitor use limits may become necessary to protect resources in Ironcountry high- and low-development zones and transition zones. Wilderness and research natural area zone conditions limit visitor use numbers.

Interim day-use and overnight limits will be implemented on wilderness trails to retain suitability until the YERP.

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February 28, 2000

Zion Draft GMP Comments

process is completed. Group sizes for day and overnight use will be limited to no more than five people. Horse use numbers will be based on research in other wilderness areas until VERP decides correct numbers for Zion. Visitors will usually not expect to encounter other groups in wilderness, but on certain trails (West Rim, the wilderness sections of the Narrows) may encounter 2 groups per day.

Hikers, researchers, and park service personnel in wilderness will adhere to the same group size limits, and will adhere to Minimum Requirements and Leave No Trace principles.

Research Natural Areas

These areas will be closed to general public use for resource protection, research and specially authorized educational trips [Friends of Zion cannot adequately comment on Research Natural Areas without more information from the park.]

In the research natural area zone, authorized research and guided educational group sizes will be limited to no more than five people. Recreational use will be prohibited in research natural areas. Other places that do not meet wilderness conditions will be restored so that the evidence of human use is substantially unnoticeable and natural conditions prevail.

PROPOSED BOUNDARY ADJUSTMENTS

In alternative Q, the Park Service will propose the same boundary adjustments as

those described in the proposed action. A total of five land transfers with the Bureau of Land Management (totaling approximately 950 acres)

[Friends of Zion cannot adequately assess the nine access easements (totaling approximately 15.5 miles in length), and three conservation easements (totaling approximately 7,223 acres) proposed since maps and map locational information was not provided in the DGMP.]

PROPOSALS FOR WILD, SCENIC, AND RECREATIONAL RIVER DESIGNATION

Alternative Q will propose the same damages for inclusion in the national wild and scenic river system as the proposed action. The Park Service will propose the North Fork of the Virgin River above and below the Virgin River, North Creek, La Verkin Creek, and Taylor Creek, and their tributaries for wild, scenic, and recreational river designation. (See table 1 for the proposed classifications.) [Friends of Zion also requests information on why certain river sections inside the park were left out of this recommendation.]

Frontcountry Areas

The Friends recommend the NPS propose definitive visions for each area above the zoning concept so that each area will retain its unique character.

Kelso Canyon Road Area

At Q + 18

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COMMENTS

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Under alternative Q, the entrance area will be a frontcountry low development zone in keeping with the philosophy of this alternative. No new developments (e.g., adding a picnic area and/or a nature trail) will occur in this area. The Kolob Canyons Road itself (the road corridor from the entrance gate to the Timber Creek Overlook trailhead) will also be frontcountry low development. Actions in this area may, at some future date, limit traffic. Shuttles, improved trailheads and interpretive facilities along the road will not occur. The existing parking lot for the South Fork of Taylor Creek will be removed in alternative Q (to limit unpermitted access to wilderness).

The Timber Creek Overlook trail is in wilderness, and thus will not be up-graded nor will interpretive signs be added. The area to the north of the entrance will be an administrative zone, but administrative offices, park housing and maintenance facilities will be located outside the park.

Kolob-Terrace Road Area

Under alternative Q, the portion of the Kolob-Terrace Road corridor within the park will be frontcountry low development. Due to its location in wilderness, parking at the former Right Fork and Wildcat Canyon trailheads will be removed. Trailheads for the Grapevine and Hip Valley Trails also will be removed as they are in wilderness. No new ranger or maintenance facilities will be built along this road.

Lava Point

The frontcountry low development zone will apply to the entrance area and the road accessing the campgrounds and picnic areas in keeping with the philosophy of alternative Q; no new development will occur, and no new picnic sites will be added. The road from the ranger residence to the West Rim trailhead will be a transition zone. To meet desired conditions, the road by the ranger residence will be gated and closed to access by the motorized public beyond that point (Park staff and owners and guests of the private property to which the roads lead will be allowed to use motor vehicles). The road east of the gate at the West Rim trailhead including all three forks leading onto private land outside of the park, will be an administrative zone. This will allow continued motorized access by private landowners and their guests. An area north of the entrance also will be an administrative zone to support management of this part of the park. The existing ranger residence here will be replaced with a new residence and the Firepit Knoll facility will be completely removed.

South Entrance and the Main Zion Canyon Area

Here, a mix of frontcountry high development, frontcountry low development,

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Zion Draft GMP Comments

transition, and administrative zones meet. Areas zoned for frontcountry high development will include:

- most of the south entrance area including the campgrounds, the new visitor center/shuttle staging site, and the North Fork of the Virgin River running through the campgrounds.
- most of the Zion Canyon Lodge area including the parking areas, lodging facilities, and restrooms.
- No new facilities will be constructed in high use zones.

The Park Service will apply the frontcountry low development zone to the main Zion Canyon road corridor. Resource impacts will be reduced and the quality of visitor experiences will be improved along this segment of the road by creative barriers, limited signing, and delineated trails. The Grotto and the canyon bottom will be transition zones. Several trails also will be in the transition zone including: the Pahua trail extending north of the campgrounds, the lower and middle Emerald Pools trails, a segment of the West Rim trail, the trail to Angel's Landing, the Helder Canyon trail to the mouth of the canyon, and the Riverside Walk trail up to the junction with Mystery Canyon.

Several areas will be administrative zones including Sam's Canyon (site of the shuttle maintenance facilities), the Watchman employee housing area, the old waste treatment plant, the existing visitor center headquarters, a portion of the existing Oak Creek employee housing and

maintenance area, the Pine Creek housing area, the Birch Creek employee housing area, and concessions support facilities around the Zion Canyon Lodge.

Any future development will be moved outside the park.

East Entrance and the Zion-Mt. Carmel Highway Area

An area north of the east entrance will be a transition zone. No new facilities will be built on the East Side within the park.

The road corridor (100 feet either side of the centerline) and the short access road to the East Rim trailhead will be transition zones.

Zion Mt. Carmel Highway

Social trails and deteriorating resources along the highway will be rehabilitated. Short nature trails and picnic sites will not be constructed along the road. The Canyon Overlook trail will be a transition zone, and will be left alone (e.g., the park will not upgrade the trail or add more interpretive signs).

Other Frontcountry and Administrative Areas

Trailhead and parking areas at the East Mesa and East Rim trails on the park's eastern boundary will be removed.

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February 25, 2000

Zion Draft GMP Comments

to retain wilderness suitability. The Park Service will work like dogs to acquire the water rights in Camp Creek and Shutes Creek. Until then they will be managed as wilderness to the degree nonconforming uses allow.

Zion Canyon Lodge

Under alternative Q, the lodge facility will continue to provide food service and possibly lodging to the general visiting public traveling on shuttle transportation. The park will also augment the facility to provide specific visitor education and park research. Some of the lodge facilities will be converted to an environmental education center offering a variety of programs, much like the Grand Canyon Institute or the Yosemite Institute.

The center will provide opportunities to enhance science-based education for the visiting public through seminars, workshops, residential camps and similar programs. An essential element of this facility will support NPS academic and professional research in the cultural, natural, and social sciences. The facility will be run by a nonprofit organization or cooperating association that will use visitor-service proceeds to finance the science center. Housing and meals will be available for volunteer researchers, scientists on grants, visitors attending educational programs, etc. A laboratory will be constructed in part of the lodge. Participants in the center's programs might pay to help on projects, like the Earth Watch

or Crow Canyon operations. All projects performed in conjunction with this center will adhere to Leave No Trace and Minimum Requirement Processes.

The Park Service will emphasize the establishment of a nonprofit organization that will operate and maintain the facility under agreement with the National Park Service.

Management of the North Fork of the Virgin River

A River Management Plan, subject to NEPA and public comment, will employ a science-based study to detail what river period will be managed for. The plan will be considered only if the park's response to flood damage does not incur greater damage, i.e., constant road rebuilding, bulldozers, etc. Visitors will be encouraged to help in the restoration project through interpretation, assisting in work efforts, and in refraining from damaging recreational activities. Most of the river will be a transition zone in the main Zion Canyon, but the minimum appropriate tools will be used to complete restoration. Water collection structures at springs will be studied to determine if they should be retained. No new water treatment plant will be built in the Main Canyon. Although restoration is of considerable importance to the park's river environment, it will be considered behind more pressing resource degradation issues.

IMPLEMENTATION

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Zion Draft OMP Comments

Priorities and Funding

Unlike the other alternatives, the Park Service will implement the actions under alternative Q over the next eight to ten years, otherwise it will be too late. Partnerships with other agencies or groups will be established to implement true ecosystem and wilderness management within a regional context.

Unlike the other alternatives, staff increases and reallocations within park programs will not be as massive to support the implementation of this alternative. The park service will apply and adhere to the new NPS Policies 2000, Director's Orders and Reference Manuals.

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Don Draft GMP Comments

Projects Eliminated from Alternative B to Estimate Cost of Alternative Q

Area and Actions	Capital Costs/ Construction	One-time Staff Costs	Annual Staff Costs (Using the staff costs for the development)
Public Employee Facility			
No new maintenance and administrative offices. Possible upgrade of visitor facilities in future.	\$100,000		2.5 FTE / \$81,000
Public Building Area	\$215,000		
Don't build anything	\$550,000	3.7 FTE / \$124,000	4 FTE / \$142,000
Little Point Area			
Replace one employee residence. Other employees will find housing outside the park.	\$124,000	1 FTE / \$36,000	
Other (General) Holdings	\$100,000		
Manage wilderness as wilderness		2 FTE / \$73,000	4 FTE / \$156,000
Interpretation Plans			
Prepare nine plans and studies (wilderness, climbing and canyoneering, air tour management, ecosystem management, etc.)		15 FTE / \$500,000	7 FTE / \$206,000
Wilderness Management			
Review and update management or resources management			1 FTE / \$346,000
Trail Development & Management			
Highways			
Only build visitor, administrative and maintenance facilities if major out-of-park development occurs outside park. Locate facilities in development at the expense of the developer.	\$ 840,000 \$1,840,000	7 FTE / \$251,000 3 FTE / \$ 97,000	6 FTE / \$296,000 2 FTE / \$ 52,000
Water Park Complex			
Possibly review the North Fork of the Virgin River, possibly convert the lodge to a research/visitor facility, don't build water treatment facility.	\$ 640,000 to \$1,414,000 \$2,000,000 to 4,164,000		2 FTE / \$780,000 5 FTE / \$195,000
Total Costs	\$1,713,000 to 4,713,000	35 FTE / 1,028,000	26.5 FTE / \$1,705,000
Savings	\$5,591,000 to 7,786,000	9 FTE / \$326,000	7.1 FTE / \$207,000
Additional Costs			7 FTE / \$268,000
Overall Cost Alternative Q			4,707,000 to 7,387,000
Overall Cost Alternative P			7,004,000 to 8,094,000
Overall Cost Alternative A			10,803,000 to 11,893,000
Overall Cost Alternative B			14,388,000 to 15,368,000

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G R A N D C A N Y O N T R U S T

February 29, 2000

Don Falvey
Superintendent
Zion National Park
Springdale, UT

Dear Superintendent Falvey:

The Grand Canyon Trust greatly appreciates the opportunity to review and comment on Zion National Park's Draft General Management Plan. Given the breadth of the plan and what we suspect will be the focus of comments by other individuals and organizations the Trust will limit its comments to the following topics:

Soils/Ecosystems Context:

1. The largest single shortcoming of the Management Plan is its failure to account for the socio-economic context of the landscape in which the Park lies. The Plan goes to great extremes to account for the protection and management of the natural resource values of the Park in light of dramatic increases in visitation. Yet both the State and County are predicting exponential increases in population in Washington County. These increases will necessarily affect the Park in ways not foreseen within the Draft Management Plan. These increases will take place within the timeframe of the Plan and therefore must be accounted for.
- The local population is predicted to increase by greater than six fold within the next fifty years. This growth, if it occurs, will have a major devastating effect on the natural resources and ecological processes of the Park. Housing development will close in the east and northeast corners of the Park. Visitation will impact the Springdale entrance. Demand for backcountry use will be overwhelming. Park facilities will be over run with tourists. Of course, visitation can be limited, channeled, and controlled, but Zion resources will be requested regardless and the ecological integrity of the Park will be severely compromised. The Draft Management Plan does not adequately account for this degree of growth.

Grand Canyon Trust recommends that the Park seek Congressional approval to initiate a boundary study which would expand the Park's boundaries and facilities into adjacent BLM Wilderness Study Areas and private lands.

2. The boundary study should include the following parameters:
- Local and regional population growth projections and impacts on visitor use
 - Maintenance of critical ecological processes at the landscape level that support native populations
 - Range and connectivity needs of native populations
 - Suitability of adjacent lands for accommodating increased visitor use

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Grand Canyon Trust

1. We recognize that the population of Washington County will continue to increase in the future. We also realize that increases in visitation must be managed and that limits on visitor use are necessary in areas. However, just because Washington County will continue to grow is no reason to believe that the National Park Service will allow park resources or the visitor experience to deteriorate. One of the primary purposes of the *General Management Plan* is to provide a proactive framework for addressing future problems related to increasing visitor use and adjacent development. We believe the actions in the plan (e.g., conducting carrying capacity studies, acquiring conservation easements, pursuing an ecosystem management approach) will help prevent many potential negative impacts to the park's resources due to population growth.
2. The preferred alternative has been revised to include a request for congressional authorization to prepare a related lands study that would identify key lands that are integral to maintaining ecological integrity and long-range conservation of critical natural and cultural resources.

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- Facility needs and options in adjacent lands for accommodating increased visitor use
- An analysis of the economic benefit to the local economy of protecting and expanding Zion
- What boundary would provide the most scientifically defensible landscape capable of supporting watershed and ecological processes, viable native plant and animal communities, while supporting dramatically increased levels of visitation?

While we anticipate resistance to this idea from community leaders in the affected counties, we believe that an objective analysis will demonstrate a huge economic benefit to protecting and enlarging the unique natural resource represented by Zion National Park. As this area grows, it serves the best interest of its citizens to protect and maintain the natural values which provide the base upon which all other economic interests depend. The Trust hopes that an objective and constructive dialogue on this issue may ensue.

Virgin River Instream Flows.

- 3 The Virgin River is the force that formed Zion Canyon. Protection of the river is critical to preserving the integrity of the biological, ecological, and physical processes that maintain the dynamic character of Zion. Some 11,000 acre feet of water continues to be subject to development on the east and northeast boundaries of Zion. Development of water to this magnitude will affect the natural processes of the river, reducing flood and channel maintenance flows, reducing reproduction of the already depleted riparian corridor, and possibly increasing contamination within the river. Grand Canyon Trust has two recommendations:


- The Park seek funding to acquire water rights in the headwaters above Zion. At a cost of \$1,000 per acre foot this might cost as much as \$11,000,000.
- The private and public lands in the Virgin River headwaters above Zion be designated as a watershed protection area, and uses managed to reduce potential impacts within the Park. The private lands could be designated as a USDA Watershed Priority Area, thus applying federal funds to protecting water quality.

Parunuweap.

- 4 Grand Canyon Trust supports the continued management of Parunuweap as a Research Natural Area. With growing evidence of increased use of Zion's backcountry, Parunuweap, with its naturally limited access, provides a laboratory for the study of ecological processes unaffected by visitation.

Thank you again for this opportunity to comment.

Sincerely,


James P. McMahon
Southwest Utah Director

RESPONSES

3. While the purchase of water rights is not specifically precluded by the Zion National Park Water Rights Settlement Agreement, it would be a departure from our negotiating position that existing water diversions do not have a measurable impact on park waters. Additional large diversions upstream of the park are unlikely at this time because the state engineer considers this basin fully appropriated to downstream users. For these reasons, acquisition of water rights upstream of the park is currently a relatively low priority. Since the Water Rights Settlement Agreement specifically limits the park's federal reserved water right, the only way for purchased water rights to be converted to instream flows would be for them to be donated to the Utah Department of Natural Resources.

While it is unclear whether the priority watershed designation is specifically being used in the state of Utah, the Park Service supports the use of water quality remediation and watershed planning programs to improve and maintain water quality. The park staff is currently participating in watershed management planning efforts in Kane and Washington Counties to address waters that do not meet state standards. Additional programs, both state and federal, that could provide funding to private land owners and agencies for water quality remediation will be explored.

4. Due to the values and sensitivities of the natural and cultural resources present in Parunuweap Canyon, the preferred alternative has been revised to include Parunuweap as a research natural area.

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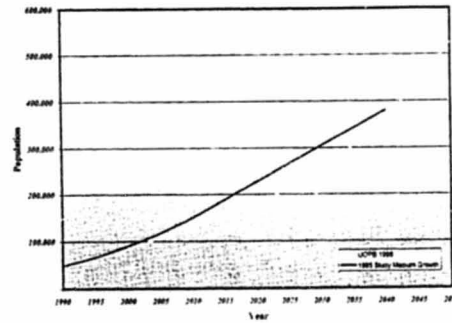
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Figure 3.1
Population Projections for Washington County



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Donald Falvey
2000
Superintendent
Zion National Park
Springdale, UT 84767-0100

February 29,

Dear Superintendent Falvey,

The Grand Canyon Wildlands Council and Southwest Forest Alliance thank you for the opportunity to comment on the Draft GMP/EIS for Zion National Park.

We strongly urge that the "goals" section include the following statements emphasizing a strong wilderness and ecosystem conservation commitment:

- Actively pursue Wild and Scenic designation for the Virgin River and its tributaries.
- Manage the Park as a de facto wilderness, with consideration of the Park as a core ecological reserve.
- Manage the Park with regional ecosystem implications in mind (i.e., the status of ecological buffer areas and relationship to dispersal corridors).
- Develop a scientifically credible conceptual model of the Park ecosystem to help determine the inter-relationships between its natural and cultural resources and dominant ecological processes.
- Manage towards restoration of endangered, extirpated, and large predatory species in the Park region.
- Conduct/update the Park's comprehensive biological inventory, with special emphasis on the distribution of endangered, endemic, and important indicator species (e.g., large predators), as well as habitats, especially those required by extirpated species.
- Report annually to the public on the Park's progress towards these scientific and management goals.

Specific Comments:

In the context of conservation biology reserve design, Zion National Park forms a core area where native species and natural processes should receive the highest protection.

Grand Canyon Wildlands Council and Southwest Forest Alliance

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possible. Our first two comments address what legislative protection should be pursued.

Wild and Scenic Rivers

First, we heartily endorse an eligibility/suitability study of all riparian zones within the Virgin River basin. The Wild and Scenic Rivers Act is potentially as significant to the water resources of the Park as the Wilderness Act is to land resources. The Act is a strong congressional directive that river areas designated pursuant to its authority be preserved in their natural, or at least existing, condition. This implies an adequate quantity of water, of acceptable quality, necessary to accomplish the purpose of preserving the free-flowing conditions of a designated river. Since an adequate supply of water obviously is necessary to accomplish the purpose of preserving the free-flowing condition of designated rivers, the Wild and Scenic Rivers Act stands as the clearest expression yet of Congress' intent to assert a Federal right to water.

Rationales for proposing designation include, but are not limited to: 1) protection of park resources from internal or external threats, 2) to extend into or out of the park a designation or proposed designation of the river on other public lands, 3) to recognize the outstanding values of the river, or 4) as a perceived aid in managing a river area in the park. Designation would aid long-term protection for the Virgin River and its tributaries, some of which are already threatened by activities such as well drilling, diversion, and other developments.

Wilderness

We recognize the biological and sociological significance of wilderness protection. In wilderness (proposed as well as designated), managers must maintain and protect ecological processes and natural conditions as well as provide for a wilderness experience (Wilderness Act, Section 2(a)(1)). While this apparently contradictory preserve-and-use philosophy reiterates a fundamental premise of the NPS Organic Act (39 Stat. 535, 16 U.S.C. 1), the Redwoods Act Amendment (16 U.S.C. Section 1a-1) emphasizes a rigorous standard of protection and prohibits use-related derogation of all park values. National Park Wilderness should afford the highest level of legal protection for any area in the United States.

The following comments develop a framework for the Final GMP:

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Ecosystem Management

1 With the exception of the Wild and Scenic River study, ecosystem management strategies have been overlooked. Protection of park values must be accomplished within the context of surrounding lands, which often have conflicting management mandates. To meet wilderness objectives, management programs must develop a thorough understanding of the conditions and processes that make up the wilderness resource, such as air and water quality, wildfire, biota and habitats, and recreation, to name only a few (Cole 1990). Land-use practices on adjacent lands, such as mining, grazing, water diversion, logging, and road construction, and the introduction of exotic species may pose environmental threats to the Park. Attainment of the long-term management goal of protecting the ecological integrity of individual wilderness areas requires looking beyond the Park boundary and adopting an ecosystem management approach. This concern must be reflected in Park goals.

Ecosystem management is management driven by explicit goals, executed by specific practices, and made adaptable by **research and monitoring based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem composition, structure, and function.** Park Service policy demands that managers try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and ecological integrity of plants and animals (NPS Management Policies, Chapter 4). The ecosystem concept provides the fundamental premise for regional management and brings a compelling new vision to the ongoing debate over the future of public lands.

The Southwest Forest Alliance and Grand Canyon Wildlands Council would welcome the opportunity to help facilitate implementation of the ecosystem management concept. As mentioned above, one of our primary goals is assisting in the design and implementation of a scientifically-based network of conservation reserves within the Southern Colorado Plateau Ecoregion. As part of such a network, the large, relatively continuous wilderness covered by Zion National Park and adjacent lands provides the basis for the Park's greatest value. The Park encompasses a great diversity of species, habitats, ecosystems, environmental gradients, and natural processes. These are the natural values that management must protect and restore where necessary. Also of great significance are the geologic and cultural features that make this landscape unique.

1. A discussion of ecosystem management, including desired conditions and strategies to achieve these conditions, has been added under the "Park Policies and Practices" chapter of the document.

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Exotic species

2. Exotic species are of special concern in Zion National Park because of the potential for rapid proliferation of species such as Ravenna Grass that have already arrived in the lower reaches of the Virgin River. Removal must be immediate before the problem becomes too large to control. A long-term plan for removal of other established non-natives and replacement/restoration of native species should be developed.

We hope these comments prove useful.

Sincerely,

Kim Crumbo, Wilderness Coordinator
Southwest Forest Alliance
P.O. Box 1948
Flagstaff, AZ 86002

Kelly Burke, Coordinator
Grand Canyon Wildlands Council
P.O. Box 1594
Flagstaff, AZ 86002

cc
Rosalyn J. Kennell, The Wilderness Society
Liz Thomas, Southern Utah Wilderness Alliance
Greer Cheshor, Canyon View
Rob Smith, Sierra Club
Dave Simon, National Parks and Conservation Association

2. The GMP presents the overall desired conditions for natural resources, including restoration of native plant community integrity and control of exotic species. The recommendation to develop a long-term restoration plan would be more appropriately addressed in the park's resource management plan, which provides the details and specific strategies for addressing the park's resource management problems.

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NATIONAL PARKS CONSERVATION ASSOCIATION

Protecting Parks for Future Generations

February 24, 2000

Superintendent Don Falvey
Zion National Park
Springdale, Utah 84767-1099

Dear Superintendent Falvey:

Thank you for this opportunity to share with you the opinions of the National Parks Conservation Association (NPCA), in regards to the Draft General Management Plan (DGMP) and Environmental Impact Statement that will direct the course of visitor and resource management for Zion National Park over the next two decades. NPCA, founded in 1919, is the only national organization dedicated solely to protect and enhance the national park system for present and future generations. These comments will strive to reflect the views of our 400,000 members, including several thousand members living in Utah and near Zion National Park.

Before we address specific elements of the plan, let me try to articulate some general comments. Zion was born out of citizens' awe and inspiration experienced in this place. That uplifting spirit is still very much found here today. The name of Zion refers to the heavenly city of God. We strongly encourage the National Park Service to capture the spirit of these intangible values that are so important to this place, in the final GMP. Words do have power in them. Hire a writer who knows the essence of this place, and capture this in your final plan. For that is Zion's essential quality. It needs to be expressed to set the tone of the document so that the philosophy behind the management prescriptions, today and to come, are clear. Far more than "window dressing", the spirit of the document can move all those who read it. And having read it, the charge becomes more focused, the rationale becomes more compelling, and our ability to protect park resources in courts of law or of public opinion, is enhanced by a document that boldly attempts to capture the soul and magic of the park.

Also regarding the document's general tone, we would encourage the final plan to more effectively use the plan to educate the public about conditions currently in the park in more specific ways. What is happening to night sky in the park? To natural sounds? To water quality in the Narrows? Providing more factual

National Parks and Conservation Association

1. We agree. A vision statement has been added to the preferred alternative to meet your concern.

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data on the state of the park's resources will allow you to fully seize this "teachable moment", and take advantage of the opportunity present in the GMP.

- 2 In addition, we do not like to see so many issues (about 10 issues identified on pp. 13-14 along with others referred to later in the document) put off to other future planning processes. Our concerns are two-fold. First, given the meager money appropriated to NPS for planning, many of these plans will be put off well into the future, if they happen at all. Meanwhile, some of these issues are urgent and need to be resolved very soon. What guarantee is there that these will be addressed soon? Second, by putting off major issues and approaching them piecemeal, the park is in violation of NEPA which requires planning efforts to include an evaluation of the cumulative impacts of the agency's actions. How can these cumulative impacts be evaluated by the public if many key issues are to be addressed individually over a period of the next 20 years?

We would encourage the park DGMP to include a better discussion of the importance of these issues, in many cases provide some interim direction before a more detailed plan can be developed, and provide a succinct list in the DGMP of plans that will be developed at a later time. This list does not have to be all-inclusive as surely issues will arise that cannot be foreseen today, but it should include those planning issues which are anticipated. This approach will make clearer to the public the park's intentions. It will also complement the DGMP by specifically stating what specific issues are being deferred.

We see no reason why the plan chooses to totally ignore issues such as climbing, canyoneering and guide service, postponing these issues yet once again to some uncertain date in the next 20 years.

We would also like to note that the DGMP's three alternatives really provides the public with a curious trade-off in choices. Alternative A places emphasis on visitor opportunities at the expense of park resources. Alternative B emphasizes resource protection at the expense of visitor experiences. Then there's the Preferred Alternative. Given that trade-off, guess which alternative sounds most reasonable?

Despite the biased presentation of choices, we still prefer, overall, most of the general directions presented in Alternative B. And we suggest you use the descriptor, "more sufficient protection" when referring to Alternative B, rather than "additional" or "increased" protection. Readers need to understand that you're not just proposing additional protection to give your rangers more to do.

While the details of the plan can obscure the "big picture", it appears to us that there are seven major issues facing the park and which this document needs to address. They are: 1) increasing visitor use; 2) management of Research Natural Areas; 3) use of Parunuweap Canyon; 4) use of Zion Lodge; 5) Wild and

RESPONSES

2. The plan did not ignore the issues you mentioned. Rather it provided a general approach to managing visitor uses as noted under the "Park Policies and Practices" chapter and the management zones. The plan has been revised to emphasize the completion of a wilderness management plan and carrying capacity studies as a top priority for the park, to be completed within the next five years. In addition to indicators and standards, the wilderness management plan would address management of canyoneering, climbing, river recreation, and commercial guiding.

The *General Management Plan* is a conceptual document that focuses on what conditions should be achieved and maintained throughout the park. The *General Management Plan/Environmental Impact Statement* evaluates the fundamental differences in effects between alternatives and helps provide a basis in choosing between broad actions in subsequent implementation plans. NEPA documents are then tiered to the broadscale *General Management Plan/Environmental Impact Statement*. Tiering allows the Park Service to focus on the right set of alternatives or decisions at the right time (40 CFR 1508.28).

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COMMENTS

Scenic River designations, 6) management of the Virgin River's North Fork, and 7) development and uses adjacent to the park. We then have included short discussions of miscellaneous remaining issues. I have organized this letter around these issues.

Increasing Visitor Use: Don't Put Off 'til Tomorrow What You Need to Do Today

The tremendous increase in visitation in Zion National Park places both the visitor experience and its natural and cultural resources at risk, demanding new management prescriptions to protect park values. This document addresses the issue by recommending dispersing use to Kolob Canyon and the eastern portion of the park by being more accommodating of increasing visitor capacity there; zoning the park, and calling for a Visitor Experience and Resource Protection Plan (VERP) to be developed for setting carrying capacities at various locations throughout the park.

- 3 We do not favor providing additional pullouts, trails and more infrastructure along the Kolob Canyon road or at the eastern park entrance, particularly the suggestion of building new visitor centers at these locations. The front country experience should not become the same throughout the park, but rather should reflect a variety of experiences for visitors seeking different recreational opportunities. Thus, the Springdale entrance and Zion Canyon can provide the experience for masses of visitors; the eastern and Kolob areas of the park should remain in a much less developed state, not much different than today. Rather than changing the experience to accommodate more visitors, we would suggest limiting visitation to preserve the experience.

- 4 While zoning the park to achieve a spectrum of visitor experiences is a first step toward setting carrying capacity limits, it is not a substitute. We applaud the plan for calling for a VERP program to be initiated in the park, but we stress that calling for a plan that might be years in development and implementation -- if the ever-elusive funding is forthcoming -- is not the same as setting capacity limits. We believe that the park is not in compliance with the 1978 National Parks and Recreation Act requiring parks to establish carrying capacities, contrary to your statement on page 3 stating that this is "one of the primary purposes of this plan..."

This plan should be doing much more to put in place strict capacity limits to preserve the resources and experiences as an interim measure until such time that a more scientifically accurate plan can be put in place. To wait for VERP is to guarantee a diminishment of a quality experience for many park visitors and continued recreational impacts to the resources, and is a violation of the law.

In fact, we recommend that the final management plan include language prohibiting the park from building any more infrastructure or developing any plans

RESPONSES

3. The preferred alternative has been revised to note that there would be no expansion of visitor facilities along the Kolob Canyons Road, except for installation of restrooms at existing parking lots if necessary. The preferred alternative has also been revised to delete the references to construct new trails along the Zion-Mt. Carmel Highway because of the sensitivity of the resources in that area of the park. In addition, park managers would work with private and public landowners and agencies to locate a space outside of the east boundary of the park for use as an orientation/information facility.
4. We agree that the draft plan did not provide enough emphasis on visitor carrying capacity. The final plan has substantially expanded the discussion of carrying capacity in the preferred alternative. The final plan now goes into more detail in describing the VERP framework and provides justifications for the interim carrying capacities being proposed.

We believe that this *General Management Plan* satisfies the National Parks and Recreation Act requirement regarding the "identification of and implementation commitments for visitor carrying capacities for all areas of the unit." The plan notes this is an important issue that requires action now and in the future. It sets management zones that qualitatively set carrying capacities for the park and specifically sets interim limits regarding group sizes, encounters, and saddle stock use in the recommended wilderness area. This is consistent with current NPS guidance, which calls for general management plans to qualitatively address carrying capacity by prescribing visitor experiences and resource conditions by zone. Much work still needs to be done on identifying zone indicators and standards. The final plan provides a much stronger commitment than the draft plan did to identifying indicators and standards and completing the wilderness management plan and carrying capacity studies within five years. Preliminary work already has begun regarding data collection.

It also should be noted that if resource damage or loss is determined to be occurring before the wilderness management plan or carrying capacity studies are completed, appropriate action will be taken under the superintendent's authority under 36 CFR 1.5. (The park staff already has taken action to manage day and overnight use in two popular areas -- the Left Fork of North Creek and the upper Narrows -- based on the high potential for resource damage and crowding in these confined canyons. Overnight camping limits also have been instituted to protect resources on the West Rim and in LaVerkin Creek/Hop Valley.)

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that will affect visitation until a comprehensive VERP or similar analysis is conducted to assess carry capacity for various park resources and experiences.

- 5 Many of the limits set in this plan, such as for group size or horse use, appear to us to be arbitrary and capricious, a violation of the Administrative Procedures Act, as there is little to no underlying scientific basis for many of these numbers. One of the numbers we particularly take exception to is managing the park's primitive zones, inside proposed wilderness, as allowing 12 contacts per day of up to as many as eight people per contact. We believe that most social science studies of visitor perceptions within a wilderness area would show that these numbers - a contact every hour during a 12 hour day - with groups of as many as eight, far exceeds social carrying capacity. Again, we urge stricter limits, scientifically-based.

- 6 This plan is an opportunity - largely missed in the draft document - to begin educating the public on the need to establish reasonable limits. This opportunity is not advanced when, on page 119, you claim that, "Apparently, some people do not seem to be bothered by increased visitation." That sounds like permission to grow the park without limits. It also ignores basic recreational research studies that show visitors who seek solitude will be displaced by those who hold other values (see research work of Drs. Robert Manning, Univ. of Vermont and Jerry Vaske, Colorado State Univ. to name just two). The draft must address the displacement of certain types of visitors, as areas of the park become more crowded.

- 7 The DGMP should also commit the park to conducting a NEPA process any time there is either: a) a greatly increased amount of visitor use of the park, a portion of the park, or a type of recreational use in the park; and b) a new recreational use in the park. With that direction in place, an assessment would be required under these conditions early-on, while the issue is still manageable, rather than waiting until it becomes a problem. Thus, for example, if park visitation doubles in the next decade, an assessment should be conducted to determine whether current plans are adequate to address this new situation the park finds itself in. Or, if a new technology is introduced into the park with ramifications for visitor experience or resource protection, likewise, an assessment with public participation would be triggered.

- 8 Also, on the document's first introductory page (no page number) it states of the proposed action: "... overall park visitation would continue to increase." We submit that this is not necessarily what would occur under the proposed action. If a carrying capacity study is to be conducted, it may demonstrate the need for the park to reduce visitation in many areas. The plan must clearly state this possibility if any study is to be conducted objectively. It also needs to provide straight talk in raising the distinct possibility that under the course of this plan, more visitation limits will be enacted if visitation continues to increase.

5. See response 2 to the Kane County Commission regarding the hiker group size and encounter rate limits being set in this plan. See response 16 to Washington County regarding the horse use limits.
6. We believe the draft plan and the preferred alternative did in fact begin the process of educating the public about the need for reasonable limits. The draft plan states several times that actions are needed to manage visitor use, including placing limits on use (see pages 9, 25, 49, 50, 51, 61-62). With regard to the statement you quoted on page 119, that point was made based on the results of a 1994 study; apparently some people were not bothered by increased visitation because they said it had a minimal impact on their experience. However, in no way does that statement mean that we intend to "grow the park without limits." We also recognize that an unknown number of visitors will be displaced due to increased use in the no-action alternative, which was not stated in the environmental consequences in the draft plan. This has been corrected in the final plan.
7. The GMP provides the management direction for the park over the next 20 years. Development of the wilderness management plan and carrying capacity studies will further define desired resource and visitor experience conditions throughout the park. The GMP, wilderness management plan, and carrying capacity studies will provide the basis for proactive decision making on various issues such as increasing visitor use and new recreational uses. We expect that these plans will guide management of the park for many years. However, as with any plans, they would be reviewed as needed to determine if they are still adequate in meeting the needs of the park. Should any revisions to the plans be proposed, appropriate NEPA compliance will be completed as part of that process.
8. This sentence has been modified in the final plan. See also response 6.

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Management of Research Natural Areas (RMAs): Why? Where? How Many? How Big?

- 9 In reading this plan, we are perplexed by the plan's dealing with RNAs in the park. What are the criteria for designation? We strongly suggest that park staff need first to look outside of their boundaries. What management prescriptions on lands in the region effectively manage lands as RNAs? Looking regionally, what natural resources and/or processes are rare or threatened for which extra protection emphasis should be provided in Zion where these resources/processes are found? In other words, how should the park use special protection efforts, like RMAs, to complement the situation found outside the park?

There is no basis provided in this document for the public to make an informed decision on whether RMAs should exist in the park, what their function should be, where they should be located, how many are needed, or how large they need to be to accomplish their purpose.

We see no attempt by the park to solicit professional advice on this topic that requires some technical expertise. Input should be sought from knowledgeable professionals, which we see are sorely lacking on your mailing list of this document which includes only four university libraries in the country.

Use of Parunuweap Canyon: To Close or Not to Close? That is the Question...

- 10 In 1992 Zion National Park closed Parunuweap Canyon to recreational use until the proposed designation as an RNA could be studied and evaluated. Like our main point in the previous section, we do not believe the public has enough information to make an informed decision here. Has the park informed the public of the results of its post-1992 study of the Canyon? Did it do a study? What is the motivation to now delist the RNA? What are the values in keeping it closed?

We believe the park is very vulnerable to a legal challenge surrounding its management of this canyon. First, there were no public participation process over the decision to close the canyon and apparently the promises made to study the canyon and report back to the public have not been kept. Second, the decision to close then, or open now, can be seen as "arbitrary and capricious", a violation of the Administrative Procedures Act, without greater scientific justification.

We only point out these concerns because we feel the park is not treating this issue with the seriousness it demands. You need to do far more in the way of documenting this canyon's many values and resources before you can make an informed, enlightened decision.

9. See response 18 to the Friends of Zion.

10. Due to the values and sensitivities of the natural and cultural resources present in Parunuweap Canyon, the preferred alternative has been revised to include Parunuweap as a research natural area.

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- 10 An example of how poorly this appears to be thought out, is that the plan cannot identify even an access route to and from the canyon, should it be opened to the public.

It said, if a decision is forthcoming, we would encourage you to make the case to keep it closed. So many areas of the park are under such increasing visitation pressures, that it is a prudent course of action for the park to fully preserve as pristine one of its canyon complexes. Perhaps it should receive RMA status. One of its values certainly might be serving as an undisturbed riparian area baseline that might help inform management decisions for other riparian areas in the region, including her sister stream, the North Fork of the Virgin River.

Use of Zion Lodge: Recreation vs. Education vs. Restoration

- 11 We commend the park staff for considering the full spectrum of possible uses of Zion Lodge, beginning in the scoping document. We believe there are good reasons to argue that the lodge should be kept as is (thus allowing visitors who do not camp to have an overnight experience in the park), using it as an environmental education center (to foster a better understanding of park resources and values) and to remove it (to restore the valley to its natural state). Each reason is valid in its own right. We need to ask: what is the best use for this remarkable canyon valley?

We would encourage the park to explore how a part of the lodge might be reserved for environmental education and research groups, at least during portions of the year.

We would also ask the park staff to think about ways in which the valley could be restored to a more natural condition. If this can largely be done with the lodge present, great. If the presence of the lodge prohibits significant restoration of the valley, then this plan should begin to prepare the way for the possibility of the eventual removal of the lodge beyond this document's planning cycle.

Wild & Scenic River Designations

- 12 We support the wild, scenic, and recreational designations on all tributaries as identified in the DGMP. Further, we support a wild designation of Shunes Creek within the park. The short section of Shunes Creek possessing an historic water right does not qualify for wild status, but should be designated as recreational.

Management of the Virgin River's North Fork: Can this Virgin be Rehabilitated?

- 13 The DGMP makes no mention that there is no regeneration of cottonwood trees along the North Fork of the Virgin River in Zion Canyon. The forest that exists there today was sustained by river flooding and meandering across the valley.

11. See response 24 to the Friends of Zion.

12. Comment noted. The plan proposes that the segment of Shunes Creek above the water diversion be classified as wild and that the segment below the diversion be classified as recreational.

13. The "Primary Planning Issues and Concerns" section of the document has been revised to include a discussion of the current condition of the North Fork riparian community.

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- 13 floor. Today the river has been channelized and the banks fortified to prevent these natural processes.

We strongly urge the park to remove much of the river's artificial constraints and move the riparian system here towards a more natural hydrographic process, working to restore the natural elements of the river. Policy should promote natural processes to dominate to a greater degree. Actions here may need to be guided by adaptive management, employing some practices and then measuring the effect. It may be that the riparian zone in Pariauwap Canyon can serve as a model for better understanding this system.

If the way visitors must be transported to the upper end of the canyon changes as a result of the river, so be it.

Development and Uses Adjacent to the Park; Don't become an island

- 14 We recommend that the DGMP call for a Related Lands Evaluation, similar in technique to that accomplished by Rocky Mountain National Park and its gateway community of Estes Park. Under the evaluation done in partnership with the community, issues were identified of joint concern, and committees were established to develop joint solutions. Such an approach would seem very timely and worthwhile for the park and its gateway communities of Springdale and Rockville.

Other Issues

- 15 Regarding wilderness management in the park, we believe the plan confuses recommended wilderness with proposed wilderness. Each term has specific legal definitions, so you will want to be sure to use the correct term.

In addition, we are concerned that the DGMP's call to change boundaries of proposed wilderness may be using inappropriate procedure. The U.S. Code speaks to the process of changing designated wilderness boundaries with notice in the federal register and formal public hearings. It is not clear if these procedures are required for proposed wilderness, however, this may best be addressed in the wilderness plan you propose to initiate. In any case, it is not a good precedent to be changing proposed wilderness boundaries by cherry-picking boundary areas to exclude areas that are now receiving heavy use, and we would ask that you re-examine this issue.

We are pleased you recognized night sky as a resource to be protected, although once again the wording is weak as is the implementation called for. Explain more why visitors find this an important resource and that Zion is one of the relatively few places in the country where the celestial sights are still awe-inspiring. We believe the plan can call for retrofitting all lights in the park under NPS control (not just in natural areas), to reduce light pollution in the night skies to the maximum degree possible, as an interim measure to a more

14. The preferred alternative has been revised to include a request for congressional authorization to prepare a related lands study that would identify key lands that are integral to maintaining ecological integrity and long-range conservation of critical natural and cultural resources.
15. We agree with your comment and have changed the text in the final plan. See also "Clarification of Commonly Raised Public Concerns," concern 13.

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comprehensive (regional) plan. You need to get your own house in order first before discussions begin with the community.

We encourage the park to initiate an intensified inventory and monitoring program of the park's natural and cultural resources. Other parks are leading the way to identify the park's "vital signs" and develop a monitoring program around these key resources and natural processes. We would like to see greater emphasis given to this in the plan, as well as greater input from scientists throughout the region in helping to guide park management. Then use this information in your management decisions, which does not seem to happen enough in this park.

- 16 We would like to see the DGMP call for greater communications, forums and discussions among regional land management scientists and development of cooperative planning across the landscape. We need greater outreach in this regard and a more sophisticated understanding of the role NPS plays in the greater ecosystem.

Toward that end of reaching out to the scientific community, we suggest the park consider going out to the science community with the draft plan and seeking specific, targeted comments on aspects of this plan. We are concerned that the park puts over three years in the development of this plan and then gives the public only 90 days to study and comment a complex document. Although that exceeds your policy, we feel NPS should be working harder at seeking input from qualified professionals which cannot easily be done in 90 days.

Finally, we support the park's efforts to preserve natural sounds within the park. We believe the importance of protecting this resource could be articulated stronger in the DGMP. We would be happy to draft language for your consideration or discuss this at greater length with you. Like other resource monitoring needed in the park, we support sound monitoring research efforts in the park to better understand the current situation and what further actions are needed to preserve this resource.

In sum, the park has difficult decisions ahead to protect park resources above visitor use. These decisions will be more defensible if they are science-based, rather than staff "best guesses". Greater public support needs to be garnered, both through outreach programs for the local community and an interpretive program that develops messages around park issues.

Thank you for the opportunity to provide you with suggestions for improving the DGMP. We will look forward to seeing the changes you decide to incorporate into the final plan. Please call on us if we can be of assistance.

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16. A direction on ecosystem management has been added to the "Park Policies and Practices" chapter of the final plan.

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Sincerely,

Mark R. Peterson
Central Rocky Mountain Regional Director
NATIONAL PARKS CONSERVATION ASSOCIATION

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The Nature Conservancy

February 11, 2000

Daria Sidles
 Planning Coordinator
 Zion National Park
 Springdale, UT 84767-1099

Dear Daria:

Thank you for the opportunity to comment on the Draft General Management Plan (DGMP) for Zion National Park. As a private, non-profit organization dedicated to the conservation of biological diversity, The Nature Conservancy (TNC) is very interested in the scenarios that have been presented for management of the Park.

Over the past 15 years or so, TNC has had occasion to work cooperatively with the Park on a number of projects and issues related to biotic resources. In 1987 I took part in rare plant inventories of the Park, in conjunction with Dr. Stan Welsh of Brigham Young University and Dr. Durant McArthur of the Shrub Science Lab in Provo. The following year I had the fortune to inspect several relict mesa tops in the Park and evaluate them for prospective status as Research Natural Areas (RNAs). About seven years ago I shared some opinions with the Park concerning RNA status for Paria Plateau Canyon and for other areas in Zion.

Though we have not been involved as actively or continuously as some other groups, TNC recognizes the importance of Zion National Park as a haven for many features of biological significance. We knew this all along, based on the projects I mentioned above. The significance of Zion has recently been reiterated to us in the process of conducting a large-scale planning effort to identify places in need of conservation action. We call this process ecoregional planning, and a brief fact sheet about it is presented as Attachment 1 to this letter.

We started this planning process last year for the Colorado Plateau ecoregion, which covers most of southern Utah and includes essentially all of Zion National Park. The initial, systematic data-gathering stages of this process have revealed to us the great biological importance of Zion National Park in a regional context. That is, the Park has the best (or only) examples of a number of biological resources on the Colorado Plateau. The Park Service also has excellent opportunities to conserve these

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resources, especially compared with other federal and state land-management agencies whose lands contain similar features.

In the remainder of this letter, I will provide comments on what features in Zion are of interest to TNC, and how we recommend that your management of the Park be structured to conserve these features for the life of the GMP (and, we hope, long after).

Features of Zion National Park of interest/concern to TNC

Attachment 2 to this letter contains lists of species and communities present in Zion National Park that we hold to be of conservation concern or interest. These species and communities are among the "conservation targets" identified in our Colorado Plateau ecoregional planning process.

We see that many of these are considered as natural-resource "impact topics" in the analysis of environmental consequences of the EIS (DGMP page 136). Further, the significance of Zion Park for these resources is noted in the *Affected Environment* chapter of the DGMP.

Eliminated from evaluation as natural-resource impact topics are the southwestern willow flycatcher and all rare plant species. We can accept the explanation given for excluding the willow flycatcher on page 139. However, we hope that monitoring for potential adverse impacts to its one documented location (western end of Pariahuweap Canyon) and other areas of suitable habitat will be done, and that any subsequent and/or site-specific plans/EAs will consider potential impacts to willow flycatchers.

We are also interested in conservation of the suite of neotropical migrant birds that use riparian habitats in Zion and its vicinity. Perhaps conservation of these birds as a group would be accomplished by management that maintains functional riparian communities in the Park. However, specific impacts to these birds resulting from Park visitor usage (especially during nesting seasons) may be different from visitor impacts to riparian vegetation itself. The most critical periods appear to be June and early July for the willow flycatcher, and early May through late July for all neotropical migrant birds.

Zion National Park is highly significant in a regional context with respect to the eight rare plant taxa listed in Attachment 2. Two of these are known only from Zion National Park -- Hays' sedge (*Carex haysii*) and Clausen's violet (*Viola clauseniana*), both of which grow in hanging gardens. The other six plants occur both inside and outside of the Park, but five of them have their best known occurrences or greatest portion of their ranges within the Park. These five are Foster's columbine (*Aquilegia*

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formosa var. *fosteri*, Canaan daisy (*Erigeron canaan*), Zion daisy (*Erigeron sionia* var. *sionia*), Zion jamaesia (*Jamaesia americana* var. *sionia*), and Zion tansy (*Sphaeromeria ruthiae*). Only the Jones golden-aster (*Heterotheca jonesii*) has another substantial area-of-occurrence outside of Zion, in the Death Hollow-Hells Backbone area of the Dixie National Forest. However, its presence in Zion National Park is still the largest and most abundant known for this species.

It appears that you have good knowledge of the locations and habitats of these eight rare plants, based on reports from the late-1980s studies and inventory work by Park staff, and by virtue of their being among the natural-resource GIS layers used in development of the DGMP (Appendix E). My files still contain the original field forms and mapped locations I discovered of rare plants in 1967 and 1968, and I would be happy to share these with you if you want to be sure that they appear in the Park's database.

The explanations given for not including the Park's rare plant species as impact topics (pages 139-140) are difficult to dispute at face value. That is, rare plant populations will remain secure if trails can be properly located, if routes can be properly identified, if mitigation measures can be employed, and if visitor uses/resource conditions in the Primitive and Pristine Zones remain as stated in the DGMP. However, these are very "big ifs", especially the last one.

We have special concern for the rare plants in the country along the Zion-Mount Carmel Highway, east of the large tunnel (i.e. *Erigeron canaan*, *Erigeron sionia* var. *sionia*, *Sphaeromeria ruthiae* and *Heterotheca jonesii*). In the rare plant section on pages 139-140, the DGMP accurately describes the inadvertent trampling of rare plants from off-trail travel in slickrock and adjacent habitats. Especially vulnerable is *Erigeron sionia* var. *sionia*, which grows along the edges of horizontal or gently-sloping ledges on large sandstone outcrops -- just the places where most people would walk.

The DGMP explicitly notes the vulnerability of such rare plants in the "fairly accessible and inviting" areas along the Zion-Mount Carmel Highway. The expectation that impacts to these plants will remain minimal over the life of the GMP, by virtue of being in Primitive or Pristine Zones, depends entirely on how well the Park is able to control the use levels in these areas -- a topic talked about at some length later in this letter.

How the Park is managed to conserve or enhance its important biotic resources

The Proposed Action contains many positive features, and we generally support it as a good blueprint for the final GMP. We do, however, believe that several possible

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modifications to the Proposed Action should be considered. The good points of the Proposed Action, and recommendations for some changes to it, are mentioned in the specific comments that follow regarding: (1) relict vegetation communities and RNAs; (2) locations or habitats for sensitive (target) species and communities not contained in RNAs; and (3) the special case of Parunuweap Canyon.

Relict vegetation communities and RNAs.

The rugged topography and long NPS administration of Zion have allowed certain areas of the Park to remain in (or recover to) largely unaltered, pre-European-settlement condition. Many of these so-called relict areas, with their common and unusual vegetation communities, would make good members of the regional/national system of RNAs.

We concur with the deauthorization of the Park's three existing RNAs, for various reasons including manageability problems, excessive size, and other inconsistencies with RNA selection criteria in the 1995-77 Guidelines. We are very pleased to see that the DGMF authorizes new RNAs (via zoning) in its Action Alternatives -- a change from the situation that was presented in the October 1997 publication of *Zion Vistas and Visions*. Based on the analyses that went into identifying prospective new RNAs, the Park will have much better knowledge about those areas that eventually become established. These new areas should also be more manageable as RNAs than the two large existing ones are now.

With regard to which areas to authorize as new RNAs, the suite presented in the Proposed Action is good. It includes all areas that TNC had identified in past, plus several other areas that appear to be good (though personally unknown to me) proceeding from the Park's internal analysis. To this suite of new RNAs in the Proposed Action we suggest one addition: that of Parunuweap Canyon. The rationale for this recommendation is presented later in this letter, in the section that discusses Parunuweap Canyon in particular.

The suite of prospective new RNAs in Alternative B contains many areas with which I am not personally familiar. Not having seen the Park's internal analysis, it is difficult to comment on many of these areas. In general, however, the number and size of areas involved suggests that some might be susceptible to manageability problems. This collection of areas also has the potential to contain excessive duplication of features.

The new-RNA suites of the Proposed Action and Alternative B are both superior to the one presented in Alternative A. The latter appears to be minimal and less

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representative of the Park's vegetation diversity than those of the other Action Alternatives.

The actual management of RNAs (presented in the RNA Zone description on pages 224-225) appears to be good. If you haven't already done so, it may be useful to check these general management guidelines with RNA management language contained in the NPS-77 Guidelines for RNAs. One important point that is not specifically stated in the DGMP is that RNAs are to be used for non-manipulative research only. The DGMP does state that RNAs will be closed to recreational activities, which most people would interpret as being closed to hiking access. However, it should also be stated up-front that access to cliff-rimmed mesa top RNAs via (recreational) rock climbing is also prohibited.

Beyond authorization of RNAs via the eventual final GMP, there may be additional RNA establishment procedures contained in the NPS-77 Guidelines -- primarily for documentation of the areas' contents. I would be happy to provide any information from my files or field notes for areas to which I have been, in order to help the Park comply with any additional designation requirements.

Locations/habitats for sensitive species and communities not contained in RNAs.

Apart from new RNAs, we are interested in management of places in the Park that serve as habitat for the species and communities of concern and interest to us. My knowledge of such places is certainly not as comprehensive as that of the Park's Resource Management staff. However, I can point to a few key locations as follows:

- Canyons and highlands on both sides of the Zion-Mount Carmel Highway, to the east of the big tunnel: rare plants (as mentioned above), desert bighorn sheep, microbotic crusts, Mexican spotted owl.
- Deep canyons of and tributary to the North Fork Virgin River: Mexican spotted owl, Virgin spinedace, riparian communities, hanging gardens (including the Zion snail and garden-specific rare plants).
- Panunweep Canyon/East Fork Virgin River: Riparian communities, Virgin spinedace, willow flycatcher, neotropical migrants, desert bighorn sheep, Zion tansy.

In reviewing the Park's prospective management of such areas, we first considered what would be the best zone assignments or designations for them. Generally, the more restrictively these areas are managed (in terms of visitor use), the better. The Pristine Zone would appear to be the best for conservation of sensitive biotic resources, as it allows the least number of people and has the least likelihood for visitor impact.

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We generally support the scheme of Zone assignments set forth in the Proposed Action, and clearly favor them over the Zone assignments of Alternative A. To the Zone assignments of the Proposed Action we suggest two changes:

1. Designate Parunuweap Canyon as an RNA. This was mentioned above, and the rationale for it is explained further in the (following) section of this letter that discusses Parunuweap Canyon in particular.

2. Zone the country east of the big tunnel -- specifically the Zion-Mount Carmel Highway and the watersheds of Pine and Clear Creeks -- as they appear under Alternative B (except that new RNAs in this geographic area could be as identified in the Proposed Action). Due to the importance of this area for sensitive plant and animal species and microbiotic crusts, and its ready accessibility, we believe it should be managed as restrictively as possible. Under the zoning of Alternative B, the highway corridor itself would be Front Country-Low Development, with immediate juxtaposition of the Pristine Zone.

A possible sticking point with this suggestion is that the DGMP appears to tie this zoning scenario in with a mandatory east-side shuttle system (page 92). We are not advocating that such a shuttle system be implemented right away, and are not sure why it would be mandatory (i.e. not knowing the vehicle-number thresholds of the Front Country-Low Development Zone). Such a shuttle system may eventually be necessary, and it may be good to lay the proper zoning groundwork for it in advance.

The intent of this suggestion, whatever zoning may be needed to accomplish it, is to keep the Zion-Mount Carmel Highway corridor (east of the big tunnel) as undeveloped as possible, except in the vicinity of the East Entrance. That is, create no developments or other incentives/enticements (such as unsurfaced short trails into lower reaches of side canyons, as mentioned on page 61) to draw people off the road and up into the east-side canyons.

We have also looked at the appropriateness or adequacy of the zone descriptions (Appendix D) for the Primitive and Pristine Zones themselves, since these two Zones appear to cover most of the areas in the Park that contain features of biological interest. We realize that the GMP is not the intended vehicle for providing specific details of Zone management, nor for articulating site-by-site management prescriptions within each zone. In their general way, however, the descriptions of these two Zones appear to be quite good in terms of their potential for biological resource conservation.

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1. The preferred alternative has been revised to state that no new development, with the possible exception of a few restrooms and picnic sites and associated parking spaces, would be provided along the road. In addition, park managers would work with private and public landowners and agencies to locate a space outside the east boundary of the park for use as an orientation/information facility.

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Reading the description of the Pristine Zone has raised a few red flags, however, that we believe are worth noting. The following points attempt to enumerate these issues. The observations and opinions contained in these points proceed from my past experiences in Zion, and from twenty years of seeing changes wrought by the unbridled explosion of recreation and tourism in the canyon country of southeastern Utah (the last 7½ years spent living in Moab):

- The demand for ever-increasing future levels of backcountry use in Zion is cause for great concern. The DGMP acknowledges that backcountry use has increased dramatically since the mid 1980s, and that numbers of backcountry campers have more than doubled from 1986 to 1997 (page 9). Further, the DGMP states that canyoneering is the fastest-growing activity in the backcountry, and the impacts on the resources and the hiker experience have increased accordingly (page 237). The current backcountry camping use numbers may already be too high for desired resource conditions, and the average rate of increase for the period above (about 8.5% per year) is completely unsustainable into the future.
- Impacts from "at-large" camping in the backcountry are likely to be much more pervasive and severe than those from designated-site-only camping. Unrestricted at-large camping causes proliferation of new campsites and expansion of existing sites. The "milling" behavior of campers leads to rapid beating out of ground, which is especially destructive to areas of microbiotic crust.
- The "pioneering spirit" of many backcountry users is very strong, as acknowledged by the DGMP (page 224): "...some visitors might feel like they were the first humans to explore this area." Unless they are effectively "steered" or properly educated in travel techniques, or both, many people will wander wherever they please -- to the detriment of sensitive crust surfaces and rare-plant occurrences.
- Natural-resource mitigation measures listed in the DGMP (page 50) refer to minimizing impacts on microbiotic crusts in developed areas. A longer-term, larger-scale concern is impacts to crusts in undeveloped backcountry areas from recreational visitor use.
- Avoiding adverse impacts from backcountry day-use activities is problematic. Numbers and behaviors of backcountry day-use visitors can be very hard to control. [For example, if the Pristine Zone's group-size limit of 5 people applies to day use as well as overnight use -- the Use Limits box on page 62 is not explicit about this -- how will the Park realistically administer/enforce this policy? Will pre-trip check-in and permit-issuance be mandatory for anyone setting foot in a Pristine Zone for any reason or length of time?] The land on either side of the Zion-Mount Carmel

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Highway is particularly attractive for day use, given its easy access, short routes, and scenic qualities. The sensitive biotic resources in this area (rare plants, bighorn sheep, soil crusts) are particularly vulnerable to adverse impacts.

- Sources of external publicity (guidebooks, articles in newspapers or outdoor magazines) that focus attention on particular trails or portions of Zion are beyond the Park's control and can wreak havoc on the best laid plans. Such publicity can cause faint routes to become wide thoroughfares very rapidly.
- There are likely to be some significant, and unanticipated, displacement issues arising from recent changes in the Park such as the Zion Canyon shuttle system. Future changes in Park management will no doubt create other unknown particular concern would be a displacement of large numbers of people from the main Zion Canyon to the east-side Zion-Mount Carmel Highway corridor.
- The assertions that the Pristine Zone will contain no visitor developments (page 224), and will be free of all signs of people except for faint hiking routes (page 223), will be extraordinarily challenging to achieve in the face of the bullet-points listed above. Something is going to have to give in a big way. In making the tough choices, we urge Park managers to hold fast to the strategy written on page 25 (right column, second paragraph) to "use the method that assures the most resource protection."

The DGMP identifies a number of subsequent actions to be taken in order to manage the Park in this challenging environment. One of the first to be done is a visitor experience and resource protection (VERP) plan that will form the basis for determining visitor carrying capacities for the various zones in the Park. We endorse your doing this plan and hope that resources are available to begin it soon. Some thoughts for your consideration with respect the VERP plan and carrying capacities are as follows.

- Carrying capacities, which result in "caps" on visitor numbers, should be (and almost certainly will be) based on natural-resource-protection considerations. Carrying capacities that are socially- or visitor-experience-based in nature are virtually limitless. People who are disaffected by small numbers of other visitors will simply stay away from the Park altogether, or at least from its used areas. To a visitor from downtown Berlin or Tokyo, however, a crowded trail or viewpoint may be totally acceptable. In the absence of visitor restrictions, the Park would probably never become too crowded to repulse some visitors - those who came and stayed would be the ones who tolerate the crowded conditions. [The DGMP appears to acknowledge this on pages 118-119.]

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- 2 • In order to have only faint hiking routes present in the Pristine Zone through the 20-year life of the GMP, it seems that carrying capacities there would have to be extremely low. In fact, current use levels may well exceed resource-based carrying capacities that will be determined for some backcountry areas. While the DGMP says (page 49) that "Park managers ... would limit increased visits in certain areas to satisfy zone conditions", it may in fact be necessary to decrease visitation significantly if the Park is to meet desired resource conditions in some (many?) parts of Pristine Zone.

For specific implementation of general management direction in the final GMP, guided by results of the VERP/carrying capacity studies, there seems to be a need for some type of backcountry management plan. The wilderness management plan described on page 68 of the DGMP appears to fit this bill. It would be wise also to include in this process the climbing/canyoneering management plan referenced on page 71. Such a backcountry plan should be sufficiently comprehensive and detailed to deal with issues such as day use, overnight use, hiking, horse use, climbing, canyoneering, number of groups per day (for overnight and day use), annual visitor-day ceilings, education, pre-trip orientation, backcountry facilities, permit/reservation systems, and others.

A plan of this nature could also include elements of resource interpretation. On this subject, it would seem best for the Park to avoid its own publicity or on-site interpretation of sensitive areas. Instead, brochures and other interpretive materials should steer people away from sensitive areas. It would also be good for the Park to discourage external publicity (such as guidebooks) of sensitive areas insofar as possible.

The need for a specific follow-up backcountry plan appears to be pretty urgent, and we hope that the Park is able to begin this process soon. It seems best to get out ahead of visitor-use trends insofar as possible, rather than attempting reactively to alter use patterns after they are entrenched (and also being faced with extensive reclamation). Prevention is ultimately easier and cheaper than a cure.

Another observation made upon reading the DGMP is that the Primitive Zone appears to have advantages over the Pristine Zone in terms of greater flexibility for backcountry "developments" (e.g. designated campsites, construction/maintenance of trails, directing of travel routes -- see page 223). Despite the DGMP's best intentions for visitor experiences and resource conditions in the Pristine Zone, the juggernaut of backcountry-use demand may call for some management uses of the Primitive Zone to be applied in the Pristine Zone. Looking ahead to this possibility, it may be wise for

2. The pristine zone definition has been revised to delete the reference to faint hiking trails and replace it with the statement that routes and paths may be defined and maintained where necessary to prevent damage to resources. The preferred alternative has also been revised to acknowledge that, based on interim encounter rates, visitor numbers may need to be limited or reduced on routes in the pristine zone.

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Zone management language in the eventual GMP not inadvertently to preclude actions that may be necessary in the future in terms of developments (e.g. dedicated/maintained trails, designated campsites) or visitor management in the Pristine Zone. If this is unacceptable, then the Park would be faced with implementing highly-aggressive visitor management policies for the Pristine Zone such as mandatory permits for overnight and day use, mandatory pre-trip education, daily/annual limits on group numbers, and others. This latter course is generally suggested on page 224 of the DGMP.

A final observation is that ongoing monitoring of visitor use levels and impacts to sensitive resources in the backcountry (i.e. Primitive and Pristine Zones) is vital. The DGMP mentions that this is being done, but does not describe the details of the monitoring program. For resources such as rare plants and microbial mats, permanent transects and repeat photographs may be useful tools for tracking changes.

I hope that the foregoing comments are not seen as too pessimistic or patronizing. In some ways they are a reaction to the experience of watching recreational growth and impacts over the past decade or so in the Moab area (Arches NP, Canyonlands NP, BLM lands). The situation in Zion and its surroundings is certainly similar. If you don't get control of it now, then you never will.

Parunuweap Canyon.

The Parunuweap Canyon area merits special consideration for a number of reasons. As mentioned earlier in this letter, it contains a relative wealth of significant and sensitive biological features. Among these are cottonwood-ash-willow riparian forests, Virgin spinedace (most abundant occurrence in the Park), willow flycatcher (only documented sighting in the Park), neotropical migrant birds, desert bighorn sheep, Zion larsen, hanging gardens, and typical upland communities of piñon-juniper and mountain brush that have had little or no grazing for 60+ years. Parunuweap Canyon also has great significance from an archaeological standpoint. Finally, it is significant in that it lacks recent visitor use, meaning that it does not have an established pattern of such use that many people will expect to be continued.

I have never been in Parunuweap Canyon, having only looked down into it from above on its north side, and so have not seen its biological features first-hand. In past meetings and correspondence with the Park I attempted as best I could to evaluate the worthiness of Parunuweap Canyon for designation as an RNA, but at those times stopped short of making a recommendation one way or the other.

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Strong arguments have been made by others for designating Parunuweap Canyon as an RNA. Nothing I know about it disqualifies it from RNA status according to the selection criteria contained in the NPS-77 Guidelines, to the contrary, it appears to meet most of the criteria very well. Further, its authorization for RNA designation in two of the three Action Alternatives of the DGMP acknowledges that the Park considers it to be worthy of RNA status.

3 Therefore, based on the biological significance and worthiness of Parunuweap Canyon as a Research Natural Area, we recommend that it be so designated as provided for under Alternative B of the DGMP (i.e. not excluding the river corridor as in Alternative A). As such it would be managed according to the prescriptions of the RNA Zone, except that some fine-tuning may be desirable as a follow-up to designation. For example, maximum party size may be better set at five (as in the general Pristine Zone), a maximum number of annual user-days could be considered, etc.

If RNA designation for Parunuweap Canyon is not authorized, then it certainly should be included in the Pristine Zone as provided for in the Proposed Action. Further, its features and significance merit special management beyond that generally called for in the Pristine Zone. Page 62 of the DGMP acknowledges this need for different treatment, and lists conditions of this special management. Several comments about special management for Parunuweap Canyon -- if it does not become an RNA -- are as follows.

- We strongly agree that under no circumstances should Parunuweap Canyon be open to independent public use.
- The term "NPS-sanctioned" is not clearly defined. It would be best for groups to be NPS-guided only, or at a minimum have a Park Service person familiar with Parunuweap Canyon's resources accompany each group.
- Reduce the limit on number of people per party to 5 for day use (rather than 9). Also, restrict visitation to one group at any one time, and establish limits on frequency of group entry and total number of person-days per year (probably very low, in the hundreds rather than thousands).
- Avoid any entry into the riparian area unless specifically studying resources there (such as birds). Allow no other travel off the designated route, unless needed for valid research purposes.
- Determine and put in place these and all other use conditions (e.g. DGMP page 62) BEFORE opening Parunuweap Canyon to any public visitation.

3. Due to the values and sensitivities of the natural and cultural resources in Parunuweap Canyon, the preferred alternative has been revised to include Parunuweap Canyon as a research natural area.

The final plan now sets an interim group size for research and education groups going into research natural areas at 12 or fewer people per group -- the same as the other zones in the recommended wilderness area. This interim limit will be reexamined and possibly modified when the wilderness management plan and carrying capacity studies are completed.

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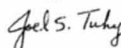
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This concludes the comments from The Nature Conservancy on the Draft General Management Plan and EIS for Zion National Park. I hope that you have found these comments to be constructive and useful. We look forward to a General Management Plan that effectively protects the Park's significant biotic resources.

Sincerely yours,



Joel S. Tuhy
Director of Conservation Science

cc: Chris Montague
Director of Conservation Programs,
The Nature Conservancy of Utah

Attachments (2)

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ATTACHMENT 1
THE NATURE CONSERVANCY AND ECOREGIONAL PLANNING

- The Nature Conservancy (TNC) is an international non-profit organization that seeks to maintain the plants, animals and natural communities that represent the diversity of life on earth by protecting the lands and waters that they need to survive.
- The process we use to set our conservation priorities (i.e. to identify the places where we will work) is termed *ecoregional planning*. Ecoregions are areas of land and water defined by similar geology, landforms, climate, vegetation, and ecological processes. Sixty-four ecoregions have been identified in the lower 48 states.
- Within each ecoregion, TNC will work with partners to develop a "portfolio" or list of sites that taken together fully represents the communities and species that are characteristic of the ecoregion. We believe that if these sites are managed for conservation, along with other compatible purposes, then the long-term survival of all of the ecoregion's biological diversity will be maintained.
- TNC recently started an ecoregional planning process for the Colorado Plateau, in southern Utah plus portions of the other four corner states. We aim to complete this project by the end of September, 2000.
- The ecoregional planning process has two steps: (1) data development and analysis, and (2) portfolio development and assessment. The first step involves assembling relevant data on the ecoregion's species and communities that are in need of conservation action (collectively termed "conservation targets") and their known locations. The second step builds the minimum group of sites that collectively contains examples of all of the ecoregion's conservation targets.
- In order to do the first step of this planning procedure, we need the knowledge and expertise of people who are most familiar with the species and biological communities of the Colorado Plateau. To this end, we held an "Experts Workshop" in Salt Lake City on November 8-9, 1999. At this Workshop we tapped into the considerable knowledge held by people who are familiar with the Colorado Plateau.
- Resulting from the Workshop we have a large volume of information on specific sites where viable examples of our conservation targets (species and communities) are located. From this body of information we will identify an optimal subset of places -- the portfolio of sites -- that most deserve attention from a biological-conservation perspective. We will also do some broad-scale analyses of threats and feasibility for actions at these selected sites.
- Once the Colorado Plateau ecoregional planning process is complete, we will focus on implementing conservation actions on sites identified in the portfolio. We cannot do this implementation alone, but aim to work closely with various partners and stakeholders to achieve conservation success within the context of compatible land uses.

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ATTACHMENT 2
BIOTIC RESOURCES IN ZION NP OF INTEREST OR CONCERN TO TNC

SPECIES

Mammals

- Desert bighorn sheep (*Ovis canadensis nelsoni*)

Birds

- Mexican spotted owl (*Strix occidentalis lucida*)
- Southwestern willow flycatcher (*Empidonax traillii eximius*) [Actually all willow flycatchers, given great difficulty with subspecies determination]
- Neotropical migrants as a group

Fish

- Virgin spinedace (*Lepidomeda mollispinus mollispinus*)

Invertebrates

- Zion snail (*Physella zionis*)

Plants

- Foster's columbine (*Aquilegia formosa* var. *fosteri*)
- Hays' sedge (*Carex haysi*)
- Canaan daisy (*Erigeron canaan*)
- Zion daisy (*Erigeron sionis* var. *sionis*)
- Jo. as golden aster (*Heterotheca jonesii*)
- Zion jamaica (*Jamesia americana* var. *sionis*)
- Zion taney (*Sphaeromeria ruthiae*)
- Clausen's violet (*Viola clauseniana*)

COMMUNITIES

Scarce, Restricted or Sensitive Communities

- Riparian: Fremont cottonwood (*Populus fremonti*) with velvet ash (*Fraxinus velutina*), coyote willow (*Salix exigua*), plus various shrub and herb species.
- Hanging gardens.
- Microbiotic (cryptobiotic) crusts.

Common, Widespread Representative Communities

- Rock-crevice communities with dwarf mountain mahogany (*Cercocarpus intricatus*) and other characteristic species.
- Piñon-juniper (*Pinus monophylla*-*Juniperus osteosperma*).
- Mountain brush: various combinations of Gambel oak (*Quercus gambelii*), Utah serviceberry (*Amelanchier utahensis*), birchleaf mountain mahogany (*Cercocarpus montanus*), and greenleaf manzanita (*Arctostaphylos patula*).
- Ponderosa pine (*Pinus ponderosa*).
- White fir-Douglas fir (*Abies concolor*-*Pseudotsuga menziesii*).

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UTAH CHAPTER
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(801) 467-9297

February 26, 2000

STATEMENT OF THE SIERRA CLUB - UTAH CHAPTER

RE: General Management Plan and Environmental Impact Statement E-1 of
Zion National Park

The Sierra Club's Utah Chapter appreciates this opportunity to provide comment on the NPS Year 2000 Draft General Management Plan (GMP) and Draft Environmental Impact Statement (EIS) for Zion National Park.

John Muir founded the Sierra Club in 1892. The Sierra Club's mission is to "Explore, Enjoy and Protect the Wild Places of the Earth; To Practice and Promote Responsible Use of the Earth's Ecosystem and Resources; to Enlist Humanity to Protect and Restore the Quality of the Natural and Human Environment, and to Use All Lawful Means to Carry Out These Objectives." The Sierra Club has approximately 610,000 members nationwide, of whom about 4,500 members reside in Utah.

The Utah Chapter of the Sierra Club offers these comments as the Sierra Club's lead Chapter concerned with the protection of Zion National Park, as with other Utah national parks and monuments. The main text presents our most central concerns. (Some related, "finer detail" comments on selected sentences, paragraphs, etc. are at the back of our submission, following 7.100000 and other references, please do not overlook.) Thank you for your consideration.

(Signed) Dick Hinson

Dick Hinson
National Parks Representative, Public Lands

(Signed) Wayne Hinkison

Wayne Hinkison, Chair,
Public Lands Committee

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Sierra Club Preferred Alternative: "B"

The Sierra Club supports "Alternative B", "Resource Protection Emphasis." This is in accordance with the overall Mission of the Sierra Club and its view on National Parks since its founding. (However, the Sierra Club does not favor conversion of Zion Lodge from its present function of visitor services and overnight lodging. This is an historic lodge and a historic, appropriate use, albeit with its own impacts on the Park. The Lodge affords a 24-hour Park experience, and thus should continue to be available indefinitely for that use, subject to lawful and appropriate NPS regulation and constraints.)

Introduction

The Sierra Club wishes to express its appreciation to the National Park Service for the hard work and planning that has gone into this GMP preparation. We applaud the high level of protection for its resources in Zion National Park proposed in both the "Preferred Alternative" and in "Alternative B" of this GMP.

However, the Sierra Club expresses as a central concern that the NPS fully address all elements of its charge as expressed in law and NPS Management Policies.

NPS has an obligation to:

1. Assure preservation of the integrity, the national dignity of parks, their superlative environmental quality, and their important role in providing benefit and inspiration for all the people of the United States, which NPS has interpreted to mean the full spectrum of tangible and intangible attributes of Parks.
2. Demonstrate leadership in environmental stewardship, and to tangibly demonstrate the highest level of environmental ethics. (Emphases supplied).

Central Problem: Tone and Philosophic Content of ZION Draft GMP AND DRAFT EIS
Need **Effective** Strengthening

We therefore note a general weakness - yet major opportunity - in these documents which needs to be clearly addressed:

The Sierra Club

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An odd, flat "soul-lessness", (ironic, considering that the Park is named "Zion" (!) permeates the draft language. It ignores the GMP and DEIS. It is surprising and disappointing to find missing even the historic origins of Zion's very name in so core a Park planning document, at the beginning of the new millennium.

As much perhaps as in any park in the system, there is in Zion, a uniquely powerful aura, a feeling of exalted, spiritual grandeur and sanctuary experienced when one looks up and out towards soaring cathedral-like spires and monuments. How else did it receive its name?

The Sierra Club thus is particularly concerned that NPS address a largely neglected human dimension. *What kinds of interior states of mind are enabled here?* The Sierra Club suggests a comprehensive review of the popular and historic literature about Zion's unique inspirational/aesthetic quality for so foundational a document as its Year 2000 GMP. Zion richly affords a "contemplative recreation" opportunity, which deserves more explicit recognition.

This recognition is necessary because it is critical to the *Significance of the Park* (as implied in its very name.) Such a review would provide more ample reason to afford Zion the best level of protection as we move into a third millennium, fraught no doubt with many tough controversies.

Environmental law professor Joseph Sax, in his noted book, *"Mountains Without Handrails,"* and the many authorities he cites, assert the central importance of "reflective recreation", of mental quality of experience being generally preferred to crowded, superficial quantity of visitor experience. The Sierra Club has long supported that view. If ever there was a Park where that principle holds, it would be this one. NPS must better examine its potential in this GMP.

One reason NPS needs to lay a strong philosophic/aesthetic foundation for Zion stems from the particular, increasing concern of both the NPS itself and of Zion managers, also of the general public, regarding the increased threats to Natural Quiet. It is the disruption of peace and quiet, the flattening of *interior states* of wonder, that we notice more and more. This threat is becoming especially real for Zion from many sources, especially from motorized engine sources on ground and in the air.

The quality of landscape and soundscape, even skyline, the very *aura* of the Park, the quality of contemplative experience once possible in such a special place as Zion, may soon become permanently crumbed. The "interior domains" of art, wilderness, and beauty perception, the very poetry of landscape and nature are being pressed flat. They are drained by loss of the natural quiet and sounds, and interfered with by other distractions, high and low. Holistic contemplation and unconstrained freedom of enjoyment are going.

As author Jack Turner concludes¹ (re personal experience from another southern Utah Park - Canyonlands), *the decline of wilderness and biodiversity may be rooted in the decline of "wilderness music, spirit, holiness, the sacred and soul" in our experience of the natural world. He sadly and logically observes, "we treat the natural world according to our (diminished) experience of it."*

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Remedies: (1) Strengthen the Foundational Elements

1. Why not, then, explore the deeper dimension of *aura*, including a paragraph about the name *Zion*, plus some historic quotations or stories, and drawing upon some evocative *Zion* place names? This would provide avenues within the GMP towards a fuller recognition of the interior domains of wonder which can be fostered and expand in such a park setting.

Scattered allusions to "solitude", or "tranquillity" or even "beauty" do not—in themselves—lay a sufficiently adequate philosophic foundation for *Zion*. The NPS' foundational law (see above) indeed draws on such terms, including terms like "dignity", "inspiration." But we need some full sentences, actual paragraphs, some vivid examples of *Zion* that flesh out, evoke meaning for these terms.

Failure to provide the requisite foundation in "Significance", and elsewhere in the GMP, will "spin off" negatively all down the line; it will diminish or undermine critical subordinate plans such as strategic and implementation planning to address key issues. The NPS needs, rather, to provide a strong, opening philosophic-motivational base throughout "Planting Background", "Primary Planning Issues and Concerns", "Park Policies and Practices", also in particularly related GMP sections such as "Night Skies", "Natural Sounds and Natural Quiet", "Visitor Use and Experience, Information, Orientation and Interpretation", "The Natural Soundscape", "Scenic Resources", etc.

(2) Strengthen "Natural Soundscape" Section

Having suggested deeper core foundation and principles, the Sierra Club applies that suggestion also to the *Natural Soundscape* Section (Pages 116-117). Our earlier considerations take on added weight in regards to basic Principles of Natural Quiet from both NPS and the Sierra Club, as applied to *Zion*.

1. *The sounds and silences of nature are among the intrinsic elements which combine to form the natural environment. Natural sounds amidst intervals of stillness are inherent components of the "scenery and the natural and historic objects and the wildlife" within units of the National Park System.*
2. *Natural quiet is the extended opportunity to experience only natural sounds amid periods of deepest silence. The quiet to be preserved or restored is as defined by the National Park Service as "the quiet at the lower end of the ambient sound level range that occurs regularly between wind gusts, animal sounds, etc., not just the average sound level." As the Park Service explains, "Lulls in the wind or interludes between animal sounds create intervals where the quiet of a rylvan*

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setting is quite striking. In considering natural quiet as a resource, the ability to experience intrudes of extreme quiet for their own sake, the opportunity to do so for extended periods of time (are) what natural quiet is all about.¹⁴

3. Zion is a crown jewel National Park with vast spaces of noble and astonishing beauty, tremendous interior depth, and wildness. Such a Park has a distinct and powerful aura, fully dependent upon the tenuous natural sounds and natural quiet. As such, this area affords unique opportunities for undistracted respite, solitude, contemplative recreation, inspiration, and education. Further, this Park also provides scarce refuge and undisturbed natural habitat for animals. Artificial, human-generated noise can disturb some sensitive animal activities.
4. A goal of Zion managers should be to preserve and, where impacted, fully restore the natural quiet within the Park, and to address this issue in the unit's GMP.
5. The Sierra Club supports the establishment of appropriate noise standards, and comprehensive baseline sound level monitoring and sound source inventories of all NPS units. This includes continual assessment of noise from all human-generated sources and incorporation of public comments about noise impacts.

2. Thus, the Sierra Club supports the presentation offered by 1995 park volunteer Dick Hinson at the January 12, 2000 public hearing on this GMP in St. George, regarding "The Natural Soundscape" section and its quantitative Table. The Sierra Club likewise supports the requested inclusion of "HMDMH Report" No. 295270.02, "Summary of Noise Monitoring Results - Zion, Rocky Mountain National Parks" in the Administrative Record, and its specific integration into the GMP and EIS discussion of the Natural Sound Ambient there as appropriate.

The Natural Soundscape Section and Table should thereby more comprehensively present all available data that documents and analyze the profound and valued baseline quiet of Zion. The HMDMH Report clearly demonstrated a very quiet natural ambient at 15 to 25 dBA in various areas of the Park.

The Club urges that baseline sound monitoring and source inventory be resumed as soon as possible then, to further develop scientific understanding of this natural quiet ambient.

Terminology: The use of the term "Natural Quiet" in various places within these documents is noted and appreciated. However, the term "Natural Sound" ought not be allowed to supplant "Natural Quiet." Sound risks trumping Quiet, an undesirable tendency seen in Headings: "Natural Sounds", used on Pages 13, 20, 152, 165, 179, and 191.

The Headings would better read "Natural Sounds and Quiet", or "Natural Quiet and Sounds". The Sierra Club has agreed with NPS (see Principle 2, above): the interminant, and sometimes extended, "silences" of nature are critical to preserve. One acoustic scientist, though recently advised NPS to generally "prefer" Natural Sound over Natural Quiet, based on "past practices" in acoustic technical literature¹⁵. He unfortunately overlooks the affective and linguistic dimensions

2. This information has been incorporated into the document.

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of this issue, how important it is that NPS not consign "Natural Quiet", then, to the shadows. Usage of both terms with the public and within the agency is necessary and valid.

(3) Add a Section: "DAYTIME SKY"

The Sierra Club agrees with the NPS that "Zion's night sky" (or, for that matter, "night-scape") is a feature that significantly contributes to the visitor experience. Does not unimpaired "Daytime Sky" also so contribute, however?

- 3 The latter concern is only partly addressed through the "Air Quality" language. Unfortunately, the ugly, screaming jet contrails (even aside from noise) of incessant and rapidly proliferating commercial high-altitude traffic above the Park are -- more and more -- derogating blue daytime skies. Long, straight, oil-permeating, multiple contrail streaks/streams on bad days markedly impair the otherwise inspiring, beautiful, vertical and horizontal landscapes of Zion. The GMP needs to include a specific description of this problem in the GMP's sections dealing with Natural Resources. It thus would recognize that the Daytime as well as Night Sky is imperiled and provide a planning base for mitigation of the sky-scape.

Clearly, the GMP should specify the need for the Park Service to work with the FAA and perhaps airline industry towards the monitoring and mitigation of this problem (which also increasingly plagues other units of the National Park System.)

Meanwhile, the Zion Lodge night lighting remains on a rather obtrusive scale both on its landscaped grounds and as seen from elevated vistas in the Park. This leads to another point.

(4) Add a Section: "VISTA CLEARING"

- 4 The NPS should include a new section introducing the simple concept of "Vista Clearing" (as has been done in the Grand Canyon National Park General Management Plan.) This will enable specific mitigation-planning regarding visual distractions -- high and low -- which have special power to diminish deeper experience of Zion's landmark vistas. "Vista Clearing" could subsume various matters ranging from aircraft contrails to garbage cans to highly distractive visitor signs, or lighting, or activities. The point is: not everything is appropriate in every vista, or vista soundscape or skyline, at Zion. The "best of the best" vistas, those with extraordinarily primeval, spiritual character, should be protected to the fullest from our profaning them.

In this regard, the Sierra Club believes that there should be no development of further visitor service facilities, parking lots, paved overlooks, roads, etc. in the Kolob Canyons section of the Park. Experience of the extraordinary vistas in that area would be diminished by such development.

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3. Both noise and visual impacts from aircraft flights over the park are a concern and should be dealt with collectively. The text under "Park Policies and Practices" chapter has been revised to clarify that park managers would continue to work with the Federal Aviation Administration and other aviation interests to minimize noise and visual impacts.
4. We believe protection of scenic vistas has been adequately covered in the "Park Policies and Practices" chapter, including the discussions under "Relations with Private and Public Organizations", "Night Sky," "Natural Sounds," and "Levels and Type of Park Development." With regards to the Kolob Canyons the preferred alternative has been revised to note that there would be no expansion of visitor facilities in the Kolob Canyons Road area, except for installation of restrooms at existing parking lots if necessary.

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Conclusion

And so we have come full circle, in a way. The Sierra Club urges NPS to articulate more fully in its Year 2000 Zion General Management Plan, the unique aura, the interior states of mind, which these pristine and noble vistas can inspire, and which we should protect. We recall these words of Frederick Delius, a man who a century ago helped open the world's eyes, ears, heart and soul to Zion:

"A vast below, sage-covered slopes extend to the distant green of Virgin
Cave, overshadowed by the towering magnificence of the Great Temple,
standing unique, sublime, unapproachable, other Great Temple of
nature."

We are at last face to face with the Unattainable.

There comes a feeling that it ought to speak, to roar, to belch forth fire
and tremors, to give some sign of the dangers of world birth it has
nursed since these rocks were dyed in the australasian seas.

But only the silence of the outer spheres encloses it, in all that wordless
expanse of magnificent perigees we hear no sound save our own voices
and the whisper of the wind that comes and goes, breathing with the
round of centuries."

Frederick Delius, 1903.

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FOOTNOTES

1. Joseph Sax, *Mountains Without Handrails*, University of Michigan Press, 1980
2. Jack Turner, "The Maze and Awe" (Chapter I) in *The Abstract Wild*, University of Arizona Press, 1996
3. (We suggest addition of the italicized words to such headings, for reasons given in comment.)
4. National Park Service, Washington, 1994 "Report to Congress on Effects of Aircraft Overflights on Units of the National Park System", Sec. 3.4 (2)
5. *Ibid.*, Sec. 3.2.1
6. James Gramann, "The Effect of Mechanical Noise and Natural Sound on Visitor Experiences in Units of the National Park System," *Social Science Research Review*, Vol. 1, Number 1, Winter 1999, (NPS, Washington)
7. Ansel Adams, *Our National Parks* (Andrea G. Stillman and William A. Turnage, eds), published by Little, Brown and Co., 1992
N.B., these prescient writings of the late, famed Park photographer Ansel Adams, penned 50 years or more ago, underscore our urgent call for NPS to greatly strengthen the effective philosophic foundation of this Zion National Park GMP.
8. Frederick Dellenbaugh, from a 1903 article in *Scribner's Magazine*, quoted in Roland Lee and Lyman Hafen, *Mahabowdewap: Landscape and Story in Zion Canyon* (Tonaquint Press, St. George, Utah) 1996

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ADDITIONAL REFERENCES AND NOTES

- 1) Also in *Mukuntuweap: Landscape and Story in Zion Canyon* (ibid.) is this memorable quote about Zion from Clarence Dutton's famed aesthetic/geological synthesis in his 1882 *Tertiary History*.

"In an instant, there flashed before us a scene never to be forgotten. In coming time, it will, I believe, take rank with a very small number of spectacles, each of which will, in its own way, be regarded as the most exquisite of its kind which the world discloses."

Dutton went on:

"Nothing can exceed the beauty of Little Zion Valley... in its nobility and beauty of the sculptures there is no comparison. No wonder the fierce Mormon Zealot, who named it, was reminded of the Great Zion, on which his fervid mind was bent: 'of houses not made with hands, eternal in the Heavens.'"

- 2) See also Nicky Leach, *The Guide to the National Parks of the Southwest*, (Southwest Parks and Monuments Association, Tucson, 1992) for other quotes on the artistic and inspirational dimensions of Zion.

- 3) For quotations on interior states of mind relating to Natural Quiet, Natural Sounds, Silence and Solitude:

- 1) Joseph Cornell, *Listening to Nature*, (Dawn Publications, Nevada City, California, 1987)
- 2) Dale Salwak, (ed.) *The Wonders of Solitude* (New World Library, San Rafael, California, 1995)

- 4) Ken Wilber, *The Marriage of Sense and Soul* (Random House, 1998) includes a sweeping, rigorous philosophical treatment of how interior dimensions of human consciousness became overly reduced (flattened) to their exterior correlates during the last two centuries.

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CONSULTATION AND COORDINATION

Sierra Club - Utah Chapter: Detailed Comments on Selected Sentences and Paragraphs

- 1) Pages 13 and 20, integrate term "Natural Quiet" into the bold headings as appropriate.
 - 2) Pages 26 and 27, "Desired Conditions" (suggested additions here, and in items below, are in italics):
 - Park staff should "provide information on how to enjoy the Park," not only in a "safe" or "low impact" way, but in an *inspirational* way.
 - "Signs of people and sound of motors and mechanized devices remain substantially unnoticeable."
 - 3) Pages 35-37, "Front Country Zones", the last "bullet" under both High and Low Development Zones should be modified to say, "Limits would only be placed on the numbers of people or certain uses of technology to address resource protection concerns. . . . Also, on Page 37, "Pristine Zone", first "bullet": "Natural conditions and processes would be largely undisturbed by people and their technology."
 - 4) Page 71, Noise Management Plan, delete the phrase ("excluding air tours"). This plan over time would provide useful information re needed modifications re air tours and should not be, actually cannot be, separated off from the ATMP in terms of the resource, especially when one considers cumulative and synergistic effects.
 - 5) Page 107, Matrix on "Natural Quiet." The title "Natural Quiet" is proper, but within the matrix cells, confusion is introduced by inconsistencies in terms, such as "natural sounds," "noise levels," "noise impacts."
 - 6) Page 165, add to very last paragraph on this page, ". . . . the same reduction in noise (due to implementation of the Zion Canyon transportation system) will unmask the sound of many of these flights. Also . . ."
 - 7) Page 166 add to the Conclusion the following sentence: "Perceived aircraft impacts will likely increase in the Zion Canyon front country owing to the 'unmasking' effect of motorized noise-reduction on-ground."
 - 8) Page 168, Will not the "more formalized" experience created by the shuttle also be more social or communal (a genuine contribution, at this stage of engagement)? This might also be noted.
 - 9) Page 170, Conclusion, second sentence, "Zoning . . . would help ensure . . . an unconstrained aura of landscape, art, flora and fauna throughout the park's pristine proposed wilderness."
- Page 170, Conclusion, fifth sentence, "Placing limits . . . would enhance opportunities

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for enjoying solitude, quiet, and experiencing high-fidelity natural sounds."

- 10) Page 180: A rewrite is needed for Cumulative Effects. Suggestion:

"If aircraft flights over the park increased, however, the noise of the aircraft combined with increased use levels would result in a negative cumulative impact on natural sound levels and on natural quiet. In Zion Canyon, the mitigation of vehicular noise because of the shuttle will be to some degree offset by the unmasking of aircraft noise flooding the Canyon from above."

- 11) Page 224, Appendix, "Visitor Experience." Suggestion:

"Only natural sights and sounds would be heard, meaning the low-end natural ambient would be fully protected via suitable standards and noise thresholds. Motorized equipment and the use of aircraft would generally not be permitted to access or impact the zone as per the Wilderness Act and NPS Policy."

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CONSULTATION AND COORDINATION

SIERRA CLUB - UTAH CHAPTER
2273 South Highland Avenue, #2-D
Salt Lake City, UT 84105

February 26, 2000

Don Falyer, *DF*
Superintendent
Zion National Park
Springdale, Utah 84763

Re: Supplemental Comment on ZION NATIONAL PARK GMP AND DEIS

Dear Don:

Today at the Visitor Center I delivered two packets containing our Sierra Club - Utah Chapter Comments on the Zion National Park Draft GMP and DEIS. NPS Ranger Christi Carmichael signed a dated note acknowledging receipt. I trust you and Darla have by now received them.

An additional NPS well-known reference, the "1994 Report to Congress on the Effect of Aircraft Overflights on the National Park System" contains a particularly relevant Essay by Peter Iyer, "The Eloquence of Silence", which I think is a good addition to these comments.

So on behalf of the Utah Chapter, I submit them, and ask that they might be appended with our Feb. 26, 2000 Comment.

Sincerely,

Dick Hingson

Dick Hingson, National Parks Representative
Public Lands Committee

cc: Darla Sidles

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Southern Utah Wilderness Alliance

February 28, 2000
PO Box 1726
Cedar City, UT 84721

Zion National Park,
Attention: Don Falvey, Superintendent
Springdale, UT 84767-1099
FAXED: February 28, 2000
435-772-3426

RE: Draft General Management Plan and GIS for
Zion National Park (DGMP)

Dear Superintendent Falvey,
The Southern Utah Wilderness Alliance (SUWA) appreciates the opportunity to participate in the planning process of the DGMP for Zion National Park. SUWA's early beginnings can be traced back to an office in Springdale, literally at the front door to the park, thus forming a connection that still exists between SUWA and the natural treasures of the park. SUWA's members, approximately 20,000 nationwide, and staff regularly use and enjoy the park's many world-renowned values. SUWA is also keenly interested in how the park is managed as it is virtually surrounded by public lands, most of which is managed by BLM, and some of which possess wilderness characteristics and outstanding attributes and are included in America's Redrock Wilderness Act, HR 1732/S861 which SUWA enthusiastically supports.

Our comments are mainly concerned with wilderness areas and their management within the park. We respectfully request that these comments be given meaningful consideration as the final GMP is being drafted.

As is clear from the mandate of the National Park Service's Organic Act, Zion National Park must be managed to preserve its resources unimpaired for the enjoyment of future generations. Further, as the DGMP itself states, the purposes of Zion National Park are to:

- preserve the dynamic natural process of canyon formation
- preserve and protect the geologic features
- preserve and protect the archeological features
- preserve the entire area intact for the purpose of scientific research
- provide a variety of opportunities and range of experiences for park visitors without degrading those resources

DGMP at 7.

With such strong direction for preserving the resources of the park, it is evident that the management plan must make preservation of the resources its highest priority. The

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www.suwa.org

The Southern Utah Wilderness Alliance

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management plan should not be a popularity vote cast by the ever-increasing numbers of park users, but rather a forward-looking document that outlines what is best for the park's resources based on findings of scientific research. This point deserves special attention, as it is evident from the DGMP that scientific review and findings were not used as a basis for many of the determinations and conclusions that were contained in the DGMP.

1. Wilderness

Proposed and Recommended Wilderness

It is SUWA's understanding that the lands in the park that are shown on the "Wilderness - No Action" map in the DGMP (page 47) are lands that have been recommended to Congress for wilderness designation. Thus, these lands must be managed as wilderness until Congress acts on this recommendation. The proposed action proposes to administratively remove lands from this recommendation. NPS cannot administratively remove lands from this wilderness recommendation.

Although the plan does state (p. 103) that parts of currently proposed wilderness areas would be excluded under the proposed action, the DGMP does not mention that these areas are recommended to Congress as wilderness. In addition, the DGMP emphasizes the overall net increase in proposed wilderness, and the fact that currently recommended wilderness areas would be dropped is nearly disregarded.

SUWA strongly urges NPS to reconsider its plan to drop various areas from proposed and recommended wilderness status. Managing the park for wilderness values will automatically allow the park to be managed so that its resources are protected, as required by the Organic Act.

2. Management Zones

Wilderness is wilderness, and management of wilderness should not be classified and divided into zones. By classifying some recommended wilderness areas as pristine, while others are classified as primitive, NPS is creating, at the very least, an impression of a distinction between various wilderness areas. There is no need, and indeed, no authority, to impose management zones that have different goals that distinguish between various wilderness areas. Wilderness cannot be high-graded or ranked.

3. Proposed Boundary Adjustments

SUWA applauds the NPS for its consideration and forethought with respect to adding to the park the five BLM areas that are contiguous to the park. These areas are included in the citizens' wilderness bill, H.R. 1732/S. 861. As these parcels qualify for wilderness designation, SUWA strongly urges NPS to manage these parcels as wilderness and to begin the public process so that the park's wilderness recommendation can be amended to include these parcels.

4. Visitor Facilities

Kolob Visitor Center

What data were used that supports the proposal in the preferred alternative to expand the Kolob visitor center? What is the basis for this proposal? How will this help protect the

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1. The text in the draft plan has been modified to address this comment. See "Clarification of Commonly Raised Public Concerns," concern 13.
2. The primitive, pristine, and research natural area zones (and in a few cases the transition zone) in the *General Management Plan* are management prescriptions that overlay the recommended wilderness. They have no effect on legal designations. Rather, the zones articulate management goals for particular areas within the recommended wilderness, identifying desired resource conditions and visitor experiences, and appropriate kinds and levels of visitor use, and management activities. Different zones are applied in the recommended wilderness because the diversity of resources, uses, and conditions warrant the area being managed differently. The Wilderness Act recognizes that wildernesses may differ in their values and that special provisions may be applied to certain areas. NPS policy also states that management zoning in wilderness is appropriate so long as the conditions specified in the zones are not inconsistent with wilderness values. Thus, we believe it is appropriate and necessary to include different management zones within the boundaries of the recommended wilderness area.
3. It will be the intention of the Park Service to administer and protect the proposed BLM Wilderness Study Area acquisitions in keeping with NPS *Management Policies* and *Director's Order 41: Wilderness Preservation and Management*. In keeping with established guidelines, the National Park Service will subsequently initiate the administrative process needed to recommend to Congress the addition of these units to the National Wilderness Preservation System as either NPS "designated" or "potential" wilderness.
4. The preferred alternative has been revised to state that the Kolob Canyons visitor center may be expanded. The improvement is intended to provide some additional interpretive and office space to a facility that now only has very limited room for exhibits and information. We do not believe that improving this facility would attract substantially more visitors - more people will visit this area regardless of whether or not the visitor center is expanded. With additional exhibits and information, visitors will be better informed about actions they can take to minimize impacts.

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4 resources of the Kolob area? What negative effects to the Kolob area are likely due to expanded visitor services? The Kolob area is nearly all recommended wilderness. Expanding the Kolob visitor center will likely serve to attract more visitors to the Kolob area, which in turn, can have significant effects on the wilderness values of the Kolob Canyons area.

5 Kolob-Terrace Road Area, Lava Point

As with the proposed Kolob visitor center expansion, how will these proposed facilities improve protection of the park's resources? This Kolob-Terrace travel way is not one of the main routes that visitors to the park take, but by constructing a visitor office on the route, visitors will likely be attracted to the area, thus causing resources of the area to sustain impacts that they are not currently sustaining. Likewise, any new visitor facility at Lava Point will likely draw more visitors to this remote area, increasing the impacts to the park's resources.

6 East Entrance

The full service visitor center at the east entrance appears to be unnecessary. The vast majority of park visitors is to see the main canyon. Thus, visitors naturally end up near the existing visitor center, which is entirely adequate to serve as the singular visitor center for the park. In addition, it does not seem necessary to construct a downsized version of the full-blown visitor center, such as the proposed focused visitor facility, to the east entrance. The fee booth hands out a park map, that indicates the location of the existing visitor center, which is adequate.

7 Zion Canyon Lodge

SUWA supports the proposal in Alternative D to convert the lodge into a facility for research and science-based education. This is particularly appealing since there are ample lodging accommodations in nearby Springdale, making the park lodge much less essential for overnight stays. The removal of the lodge will allow Zion NP to be free of commercial enterprises within the park boundaries, which is in keeping with the purposes of the park.

8 Backcountry Visitor Use Management

SUWA applauds the NPS for recognizing that the backcountry must be managed so as to protect the impression one gets of its remoteness and the opportunities it provides for solitude. The DGMP would limit the group size to five in the pristine zone and eight in the primitive zone and would limit visitor numbers on several trails. Although such limits may very well be necessary, has the NPS been monitoring the various backcountry areas in the park to determine the impacts to the resources that are currently occurring and whether the impacts are from visitor use?

9 Research Natural Areas

The DGMP fails to provide sufficient information for SUWA to make meaningful and helpful comments. Please address this deficiency in a supplement to the DGMP or in a second draft.

5. See responses 32 and 33 to the Friends of Zion.

6. Building the visitor center inside the park has been dropped from the preferred alternative in the final plan. Instead the Park Service would work with other landowners and the county to locate a space outside the park to provide information to visitors.

7. See response 24 for the Friends of Zion.

8. A formal protocol for monitoring backcountry campsite impacts has been in place for many years. When the wilderness management plan and carrying capacity studies are completed, an additional system for monitoring visitor impacts would be implemented. Also you should be aware that in the final plan we have revised the group size limits for the primitive and pristine zones. See response 2 to the Kane County Commission.

9. See response 18 to the Friends of Zion.

COMMENTS

- 10 **Future Project Proposals and Decisions**
SUWA wants to encourage the NPS to make a greater effort to involve the public, as required by NEPA, for future proposal and actions, that the NPS may take in order to begin implementing portions of the management plan. Involving the public from the very beginning of a project will result in a better-informed decision, which should result in better management of the park's magnificent resources.

Summary

In summary, it appears that the DGMP is a visitor accommodation plan, rather than a comprehensive plan to provide guidance on how to manage the park's resources in a manner that protects them. The DGMP merely proposes to spread out the increasing visitor use, rather than attempting to control it in a responsible manner. As SUWA's comments above emphasize, these various proposals do not likely meet the stated purposes and goals of the park. As such, the DGMP does not adequately address the mandate to protect the park's resources.

I would welcome the opportunity to discuss these comments with you at your convenience. I can be contacted at 435-865-0496. Again, SUWA appreciates the opportunity to participate in this planning process.

Sincerely,

Liz Thomas
SUWA

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10. We agree with your point regarding NEPA analysis and public comment. Appropriate NEPA compliance will be completed for all future proposals and implementation plans.

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February 10, 2000

Darla Sidles
Zion National Park
Springdale, UT 84767-1099

Dear Ms. Sidles:

Thank you for the opportunity to comment on the Draft General Management Plan/EIS for Zion National Park. I offer the following comments on behalf of the nearly 1000 members of Utah Heritage Foundation. Utah Heritage Foundation is a statewide non-profit organization dedicated to preserving, protecting, and promoting Utah's historic built environment through public awareness, advocacy and active preservation.

It appears that no alternative, as presented, would appreciably alter historic resources in Zion. However, the final plan and preferred alternative should, in my opinion, have stronger statements about the NPS commitment to preserve and use historic resources within the park. To that end, I urge you to include the following in the final management plan/EIS:

- When additional square footage is needed by the NPS or concessionaires, the plan should state that the intent of the NPS is to seek to reuse underutilized or under maintained historic resources before constructing new.
- During contract renewal or renegotiation with concessionaires, require a higher level of maintenance on historic resources utilized by concessionaires so that all buildings are maintained according to the Secretary of Interior's Standards and retain National Register eligibility. For instance, it appears that historic buildings in the Birch Creek area are suffering continued deterioration which could not only threaten the buildings in the future but drive up repair costs made mandatory in the future just to save or continue using these historic buildings.
- Though the NPS, Zion Park Lodge is well maintained. But, the lodge is sited within an historic district and that context is very important to maintaining historical significance as well as a unique visitor experience. I suggest that the plan note it is essential that gradual expansion within the historic district—whether new construction or infrastructure improvements—always comply with the Secretary of Interior's Standards lest the cumulative impact of these changes threaten the loss of historic sense of place.
- Lastly, I urge you to include a statement in the plan which reiterates that the NPS, as

Memorial House • Museum Green Park • Pioneer Office Bldg 38 • Salt Lake City, Utah 84103-0008 • (801) 223-0808 • Fax (801) 223-1245

Utah Heritage Foundation

1. See response 1 to the Utah State Historic Preservation Office.

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1 property steward, will seek to set an example of the highest standards in historic property stewardship.

This plan offers an opportunity for the NPS to make a strong statement about its commitment to preserve historic resources within Zion. Thank you for your work on the plan and for the chance to comment. I would appreciate the opportunity for Utah Heritage Foundation to become a stronger partner with your historic resources staff in order to better promote, and assist where appropriate, your good work at Zion National Park.

Sincerely,

Lisbeth L. Hennig

Lisbeth L. Hennig
Executive Director

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RESPONSES

Virgin River Runners Coalition

219 E. Alameda Dr.
Cedar City, Utah 84702

435 (866-7777)
jhowells@13.com net

January 30, 2000

Derla Sidles
Zion National Park
Springdale, UT 84767-1099

Re: Comments regarding Zion National Park Draft General Management Plan

The following comments on the Zion National Park Draft General Management Plan are made on behalf of the more than 60 members of the Virgin River Runners Coalition, a river-runners advocacy group based in southwest Utah.

1. We wholeheartedly endorse the Wild and Scenic River designations listed under the Proposed Action alternative for tributaries of the Virgin River in Zion National Park, including the "recreational" status proposed for the segment of the North Fork Virgin River downstream of the Temple of Sinawava.
2. We support the removal of rip-rap and gabions from the stream banks of the North Fork Virgin River in the park to allow the flood plain to return to a more natural state.
3. We support allowing rafting and kayaking on the North Fork Virgin River downstream of the Temple of Sinawava as an integral part of diversifying the recreational opportunities in Zion.
4. We support the concept of carrying capacity and use limits, but do not support the outright closure of any area, except for wildlife reproduction needs, as in cliff closures during peregrine falcon nesting season and Pahrump Canyon during bighorn sheep lambing.
5. We are not opposed to guiding services being allowed in Zion National Park.
6. We support construction and maintenance of hiking trails, particularly in less-used areas of Zion to promote dispersal of crowds from the main canyon corridor.
7. We disagree with the Resource Value Rating of "2" for recreation on the North Fork Virgin River downstream of the Temple of Sinawava, listed in Table F-1, p 234, Zion DGMP. We believe it should be a "3" -- one of the most significant in the region.

Sincerely,

James Howells
James Howells
Virgin River Runners Coalition

Virgin River Runners Coalition

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CONSULTATION AND COORDINATION

Date: 2/29/00 3:18 PM
 Sender: "Rose Fennel" <rose_fennel@tes.org>
 To: Darla Sides
 Priority: Normal
 Subject: Wilderness Society comments on Zion NP DGRP
 Darla:

I'm sending out comments as a Microsoft Word attachment, but, in case the document can't be opened, I'm also including them at the end of this email.

Thanks,
 --Rose

February 28, 2000

Superintendent Don Calvey
 Zion National Park
 Springdale, UT 84761-1099

Re: Zion Draft General Management Plan Comments

Dear Superintendent Calvey:

Thank you for the opportunity to review and comment on the Draft General Management Plan (DGRP) and Environmental Impact Statement (EIS) for Zion National Park. The Wilderness Society is generally supportive of the plan that will determine the direction of the park's management for the next two decades. The plan shows a desire to implement stronger natural/wilderness resource protection, especially Alternative B, which is the alternative we would prefer to see implemented. We do have several concerns, however, about desired changes in wilderness and lack of quantifiable scientific research on which some of the proposed actions are based.

Clarification of Proposed Wilderness for Zion NP

The DGRP refers to the park's wilderness as proposed wilderness. It is not. Park wilderness for Zion NP has been transmitted to Congress for designation. Therefore the acres discussed are, in fact, 120,620 acres of recommended wilderness and 9,040 (or 12,190) acres of recommended proposed wilderness.

Discrepancies in Potential Wilderness Acreage

In 1974 the NPS proposed wilderness for Zion NP. The park identified and proposed 120,620 acres of wilderness. It also identified and proposed potential wilderness. But, there is a discrepancy between the number of potential wilderness acres that appear in the DGRP and what is on record in the NPS WADO wilderness office. Zion's DGRP identifies 12,190 acres of potential wilderness. The WADO has on file 9,040 acres. We ask that the park consult both the 1974 wilderness proposal sent to the Secretary of Interior and the recommendation that was transmitted to Congress. We further ask that the recommendation for the potential wilderness be made available to the public in a supplemental document prior to a final GMP announcement.

Proposed Wilderness Boundary Changes

Although we agree with the Park's reasoning behind wanting to increase its wilderness acres in each of the alternatives including the No-Action Alternative, we cannot support this change being made through

1. The text in the draft plan has been modified to address this comment. See "Clarification of Commonly Raised Public Concerns," concern 13 in the introduction of this part.

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1. An administrative action such as a GMP process. The wilderness recommendation that sits before congress is sacrosanct. That Zion NP wishes to increase the wilderness boundaries is laudable, but the method in which this expansion occurs is also responsible for proposed elimination of wilderness that is part of the current wilderness recommendation.

2. Proposed Wilderness Boundary Changes as a Result of Degradation of the Wilderness Resource.

According to the GMP:

Because the transition zone is incompatible with proposed wilderness designation, the proposed (actually the recommendation sitting before congress) wilderness boundary would no longer include (emphasis added) Timber Creek Overlook trail; the Observation Point trail; a segment of the Narrows the last half mile of the Watchman trail; two miles of the Sand Bench trail; and the quarter-mile Upper Emerald Pools trail.

Had Zion managed the park a recommended wilderness as wilderness as required by National Park Service Policy this proposed cherry-picking through the recommendation would not have to be. National Park Service Policy states: Lands identified as being suitable for wilderness designation, wilderness study areas, proposed wilderness, and recommended wilderness (including potential wilderness) will be managed to preserve their wilderness character and values undisturbed until Congress acts on the recommendations. Decisions will be made in the expectation of eventual wilderness. (Directors Order 41 Section (B)(1)(b)(iv) and NPS Management Policies Chapter 6.1).

3. We recommend that Zion NP send an additional wilderness proposal to the Secretary of Interior for an additional 15,000 acres (approximately) of proposed wilderness. The proposal should be treated as a separate proposal and not affect the current recommendation. The Wilderness Society challenges the park's ability to change the wilderness recommendation as suggested in the Proposed Action or either of the two alternatives.

4. PURPOSES, SIGNIFICANCE, and Mission Goals of Zion NP
The GMP makes no mention of wilderness under park purposes, significance or mission. Wilderness is not only at the heart of Zion NP, it is the heart and soul of the park. Ninety-four percent of the park is discussed as wilderness under the Proposed Action, ninety-five percent of the park is set aside in Alternative B. Ninety-one percent of the park is awaiting wilderness designation by congress. Wilderness, wilderness character, wilderness values, descriptions of wilderness areas identified as wild, and wilderness management objectives should form the core of this section.

We recommend that the park continue to promote natural quiet and night sky visibility as two of the greatest natural resources of the park. Please include provisions for the protection of these resources in all implementation plans.

5. Zoning
The GMP needs a range of experience in the frontcountry and backcountry. We understand the need to accommodate more visitors but it does not need to be an equal level of accommodation in all frontcountry zoned areas. Do not commercialize Kolob to be equal to Zion Canyon. Leave it a low impact frontcountry area providing a more primitive experience for visitors.

2. These changes to the wilderness recommendation were dropped in the final plan. See also response 11 to the Friends of Zion.

3. We cannot make a new wilderness recommendation without preparing a separate wilderness study and holding public hearings. Since these steps were not taken during the planning process, we cannot send an additional wilderness proposal to the Secretary of the Interior at this time. See also response 10 to the Friends of Zion.

4. The Park Service will continue to manage the recommended wilderness as wilderness under its management policies.

5. The preferred alternative in the final plan does not propose additional development along the Kolob Canyons Road area. Thus, this action would continue to offer a different frontcountry experience than Zion Canyon. See also responses 32, 33, and 34 to the Friends of Zion.

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6. There is not range of conditions within pristine and primitive zones. Under the proposed structure, some primitive areas are currently quite primitive. Should they be allowed to degrade to defined primitive quality? What are the limits of acceptable change for the resource? More data or at least methodology for the IAC should be made available for comment.
7. North Fork of the Virgin River
We support the Park's desire to identify and restore parts of the river channel and floodplain to a more natural condition. We recommend that no activity occur until a fully documented and complete scientific study is done to test determination of the goal and the long term effects on the riparian and nearby ecosystems.
8. Zion Lodge
We support conversion of Zion Lodge from a visitor accommodation facility to a research and educational facility as described in Proposal B. Increased visitation coupled with the new transportation system has resulted in new privately-run hotels, motels, and campgrounds for park visitors in communities adjacent to the park. Zion Lodge, as a national park interpretation facility, should not compete with these enterprises. Conversion of the lodge would also improve night sky visibility, another stated goal purpose.
9. Group Size
Setting limits for group size in primitive and pristine zones is a very good management strategy that we support. We also support the concept that primitive zones may accommodate higher visitor impact than pristine zones. What is lacking is verifiable data as to how these numbers were derived. Is there current visitor use data? Is this available? Why doesn't the formula for which these numbers were chosen appear in the RMP? We suggest that this information and all other relevant studies be included in a Supplemental RMP prior to a final RMP and decision of record.
10. Parunuweap Canyon and Research Natural Areas
Parunuweap Canyon should remain closed to use as a baseline for scientific research to study the interplay between the Virgin River and the park's ecosystem in a pristine restricted area compared to Zion Canyon and the North Fork of the Virgin River. There is no explanation for why Parunuweap Canyon should no longer be a Research Natural Area and therefore no reason to change its status. There is no publicly available documentation to show what has occurred in the RMA since these designations.
11. VHF
VHF is not to be removed at the future when it is really needed now. VHF will help guide trails system for primitive and primitive zones. VHF will help assess impact of changes in infrastructure.
- Facilities and Communications Facilities
Under no circumstances should the park initiate or support policy that would require the location of VHF or commercial communications facilities within wilderness.
- Other Issues to be Addressed in Future Plans
The park should commit to a wilderness planning process in the RMP. Step-down or implementation planning for climbing, river recreation, natural sound, night sky, guide services, air quality and water quality could and should all be discussed as part of a comprehensive wilderness

RESPONSES

6. First we should point out that 81% of the park would be pristine zones in the preferred alternative, while only 11% would be zoned primitive. Primitive and pristine zone conditions are equally valid, although some may prefer conditions in one zone over another. In this plan we are striving to ensure that Zion continues to have both primitive and pristine conditions. Although the primitive zone would have different desired conditions than the pristine zone (e.g., this zone would allow more use than the pristine zone), park managers would not necessarily take actions to achieve these conditions. In other words, areas zoned as primitive, but with currently pristine conditions, may continue in their present condition. With regards to limits of acceptable change, a future wilderness management plan and carrying capacity studies would identify specific indicators and standards for resource and social conditions. Additional information needs to be collected to determine which indicators and standards should be selected for each zone.
7. We agree and noted on page 52 of the draft that a river management plan was needed to more thoroughly study this action. See also response 22 to the Friends of Zion.
8. See response 24 to the Friends of Zion.
9. See response 5 to the National Parks and Conservation Association.
10. Due to the values and sensitivities of the natural and cultural resources present in Parunuweap Canyon, the preferred alternative has been revised to include Parunuweap as a research natural area.
11. The text in the final plan has been modified to address your comment. The preferred alternative now states that a wilderness management plan and carrying capacity studies would be developed within five years of the completion of the *General Management Plan*. A variety of issues and topics would be covered in the wilderness plan, including carrying capacities, climbing/canyoneering, commercial guiding, and river recreation. The other topics you raised (natural sound, night sky, air and water quality) would be discussed in the wilderness plan if appropriate, and/or may be covered in the other implementation plans (e.g., the resource management plan).

COMMENTS

RESPONSES

planning process since the vast majority of the park is recommended wilderness. A diagram is notable for when these planning processes would occur is noticeably absent from the DQMP and is essential in understanding how the park plans to do comprehensive ecosystem management and planning.

Thank you for the opportunity to comment. Again, The Wilderness Society general supports Alternative B as provided in the DQMP except for the concerns expressed above. Please feel free to contact us if you have questions or need clarification on any of our comments. We look forward to working with Zion NP as they work through this process.

Sincerely,

Rosalyn J. Fennell
National Parks Program Director

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Organizations

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APPENDIXES, BIBLIOGRAPHY,
PREPARERS, AND INDEX



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APPENDIX A: SUMMARY OF LEGISLATIVE HISTORY FOR ZION NATIONAL PARK

1. Mukuntuweap National Monument established on July 31, 1909, by Presidential Proclamation No. 877 (36 Stat. 2498). Total acreage: 15,200 acres.
2. Mukuntuweap National Monument name changed to Zion National Monument on March 18, 1918, by Presidential Proclamation No. 1435 (40 Stat. 1760). The proclamation also added 61,600 acres of land. Total acreage now: 76,800 acres.
3. Zion National Park established from Zion National Monument on November 19, 1918, by Act of Congress (41 Stat. 356). Include all lands formerly in the monument.
4. On June 13, 1930, Congress approved Public Law No. 351 (46 Stat. 582), which added 17,441 acres to the park. Total acreage now: 94,241 acres.
5. Zion National Monument was established on January 22, 1937, by Presidential Proclamation No. 2221 (50 Stat. 527). Gross acreage of the monument was 48,414 acres.
6. Zion National Monument was made a part of Zion National Park on July 11, 1956, by Act of Congress (70 Stat. 527). All lands formerly in the monument were included in the park. Total acreage now: 142,655 acres.
7. An act to revise the boundaries of Zion National Park was approved February 20, 1960 (74 Stat. 4). The boundary change added a total of 3,485 acres to the park. Total acreage now: 146,610 acres. (Note: Official land records of the National Park Service indicate that as of January 1, 1970, gross acreage of Zion National Park was 147,035 acres.)
8. An act to revise the boundaries of the national park was approved October 21, 1976 (90 Stat. 2732).

APPENDIX B: SUMMARY OF KEY LEGAL MANDATES

Legal mandates provide direction for what can and cannot be considered in this plan. Several of the provisions of key legal mandates are summarized below.

NATIONAL PARK SERVICE ORGANIC ACT OF 1916 (P.L. 64-235)

This act created the National Park Service and established its mandate to conserve park resources and values and provide for their enjoyment: "[The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations... by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner as will leave them unimpaired for the enjoyment of future generations." The act also authorized the Secretary of the Interior to make rules and regulations for the use and administration of NPS areas, and allowed concessioners to be granted leases in parks.

NATIONAL PARKS AND RECREATION ACT OF 1978 (P.L. 95-625)

Section 604(b) of this act requires that general management plans be prepared and revised in a timely manner for each unit in the national park system. The act further specifies that general management plans shall include measures for the preservation of the area's resources, indications of the types and intensities of development associated with public use of the unit, visitor carrying capacities for all areas of the unit, and indications of potential modifications of the unit's external boundaries if needed.

ENDANGERED SPECIES ACT OF 1973, AS AMENDED (16 USC 1531 ET SEQ.)

The purpose of this act is to provide protection for animal and plant species that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). Section 7 requires all federal agencies to ensure that their activities do not have adverse impacts on the continued existence of threatened or endangered species or on designated areas (critical habitats) that are important in conserving those species. Thus, the National Park Service is required to fully integrate endangered species conservation planning into park system management. Agencies also are required to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. The result of formal or informal consultation with the Fish and Wildlife Service should be documented in an environmental assessment or environmental impact statement.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA; P.L. 91-190)

This act sets forth the federal policy to preserve important historic, cultural, and natural aspects of our national heritage. Another purpose of NEPA is to help public officials make decisions that are based on an objective understanding of environmental consequences and to take actions that protect, restore, and enhance the environment. The act applies to all federal projects or projects that require federal involvement. All federal agencies are directed to use a systematic, interdisciplinary approach that integrates natural and social sciences in planning and decision making that may impact the human environment. NEPA and the Council on Environmental Quality implementing regulations describe the process a proposed federal action such as this plan must follow. Among the steps in the process, NEPA and the regulations require early coordination, called "scoping," to determine the scope and significance of issues to be addressed in an environmental impact statement. A structured

format for public involvement during the public review process is specified. When preparing an environmental impact statement, the regulations further require federal agencies to rigorously explore and objectively evaluate all reasonable alternatives to the preferred alternative.

WILD AND SCENIC RIVERS ACT OF 1968 (P.L. 90-542)

This act establishes federal policy to preserve certain rivers with remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values in a free-flowing condition and to protect their immediate environments. The act created the national wild and scenic rivers system and outlined criteria and procedure whereby free-flowing streams, or portions thereof, could be added to the system. The system includes wild, scenic, and recreational rivers. Rivers and streams proposed for inclusion in the system must be considered during project planning and project impacts identified in an environmental assessment or an environmental impact statement.

NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED (16 USC 470, ET SEQ.)

This act establishes as federal policy that the historical and cultural foundations of the nation's heritage be preserved. Section 106 requires that federal agencies that have direct or indirect jurisdiction over undertakings take into account the effect of those undertakings on properties eligible for or included in the National Register of Historic Places. The section also provides the Advisory

Council on Historic Preservation and the state historic preservation officer an opportunity to comment on the undertaking. The 1992 amendments to the act have further defined the roles of American Indian tribes and the affected public in the section 106 consultation process. Section 110 requires federal managers, in consultation with the state historic preservation officers, to establish programs to identify, evaluate, and nominate properties to the National Register of

Preservation and the state historic preservation officer an opportunity to comment on the undertaking. The 1992 amendments to the act have further defined the roles of American Indian tribes and the affected public in the section 106 consultation process. Section 110 requires federal managers, in consultation with the state historic preservation officers, to establish programs to identify, evaluate, and nominate properties to the National Register of Historic Places. National register eligible or listed properties and national historic landmarks are afforded special protection in federal project planning and implementation.

WILDERNESS ACT OF 1964 (P.L. 88-577)

The Wilderness Act established the national wilderness preservation system, composed of congressionally designated, federally owned areas. Federal agencies are required to administer these areas to provide for their use and enjoyment, now and in the future, and to protect and preserve their wilderness character. NPS policy is to manage all potential, proposed, recommended, and wilderness study areas as wilderness, to the extent that existing nonconforming uses will allow, and to seek to eliminate the temporary conditions that preclude wilderness designation.

APPENDIX C: RELATIONSHIP OF OTHER PLANNING EFFORTS TO THIS GENERAL MANAGEMENT PLAN

Several plans and agreements have influenced or will be influenced by the *General Management Plan*. These documents are briefly described below.

MEMORANDUM OF UNDERSTANDING WITH THE SOUTHERN PAIUTE TRIBE ON COLLECTING NATURAL RESOURCE MATERIALS (1998)

The current memorandum of understanding (MOU) between the Kaibab Band of Paiute Indians, the Moapa Band of Paiute Indians, and the Paiute Indian Tribe of Utah allows for the collection of limited quantities of plant materials by authorized tribal members within the boundaries of Zion National Park and Pipe Spring National Monument. The development of this agreement was a collaborative effort between official tribal representatives and NPS staff. The memorandum of understanding recognizes:

- positive government-to-government relations
- specific or unique needs of tribal communities
- the constitutional religious rights of the tribes involved
- NPS responsibilities under various laws and agency policies to consult with culturally affiliated tribes
- the tribes interest in preserving and protecting their cultural and traditional heritage
- the responsibilities and obligations of the park staffs to protect natural and cultural resources as mandated
- Southern Paiute cultural affiliation and interests in park resources based on ethnographic studies

A collection permit will be authorized by tribal and park officials prior to collection activities. The permit will include the quantity and type of plant material, area of collection, and purpose. A joint monitoring program between tribal members and

park staff will be developed to assess potential impacts to vegetation communities. Both parties to this memorandum of understanding will jointly seek funding to support this resource-protection partnership.

ZION HOUSING MANAGEMENT PLAN (1998)

The housing management plan is intended to provide direction for determining the minimum number of housing units in Zion that are necessary to support the mission of the park. The plan calls for moving all NPS employee housing out of the park except for housing for emergency responders (i.e., employees in positions whose presence is required within a specific geographic area to provide a timely response to emergencies outside normal working hours), seasonal employees, lower-graded employees, and occupants of historic quarters.

ZION CANYON TRANSPORTATION SYSTEM ENVIRONMENTAL ASSESSMENT AND "FINDING OF NO SIGNIFICANT IMPACT" (1997)

This document described and analyzed a proposal by the National Park Service to initiate a bus shuttle system and develop a bike path in Zion Canyon to protect resources and reduce congestion. The shuttle system was described in detail, including when and where it would be operated, who would be required to use it, and the number and general type of buses used. The environmental assessment (EA) also described support facilities necessary for the shuttle system, including the construction of a new visitor center, parking lots, and a bus maintenance facility. Following public review of the document, the superintendent signed a finding of no significant impact (FONSI) for the proposal, allowing implementation of the plan to begin. The system started operating in the year 2000. The 1997 transportation system plan, and the resulting actions taken by park management, put some limits on the range of desired conditions and

tation system plan, and the resulting actions taken by park management, put some limits on the range of desired conditions and alternatives that could be considered for Zion Canyon in this plan. For example, allowing private vehicles in the canyon during the summer was excluded from consideration during the development of alternatives in this plan. However, some of the alternatives in this plan/EIS provide general directions on the operation of the shuttle system (i.e., the terminus of the shuttle route in the canyon).

ZION NATIONAL PARK GPRA PLANS (1997)

The Government Performance and Results Act (GPRA) directs all federal agencies to produce a strategic plan and annual performance plans. A park strategic plan describes the park's mission, mission goals, and measurable long-term goals, and includes a resource assessment. A park annual performance plan lists annual performance goals (the outcomes expected to be achieved in a given fiscal year) and includes an annual work plan (inputs and outputs) to achieve the annual goals. The Zion park staff completed their first strategic plan and annual work plan in 1997. The planning team used the park mission goals in developing the *Draft General Management Plan / Environmental Impact Statement*. In the future, GPRA plans will tier off of the *General Management Plan*, building on the mission, mission goals, and management prescriptions described here. The adequacy of the *General Management Plan* also will be continually reevaluated in the strategic planning process for Zion.

ZION NATIONAL PARK WATER RIGHTS SETTLEMENT AGREEMENT (1996)

A... agreement between the United States, State of Utah, and Water Conservancy Districts from Washington and Kane counties, was signed in December 1996 to settle the water-rights claims for Zion National Park. This agreement was developed as part of the general adjudication of water rights that the state is conducting for the Virgin River Watershed. Both state appropriative rights and federal reserved water rights were recognized for Zion National Park, with the former being critical for providing water for administra-

tive uses (such as potable water and irrigation), and the latter being essential for the protection of water-dependent resources. Actions proposed as part of this plan must be consistent with decisions made in the water-rights settlement agreement.

ZION NATIONAL PARK INTERPRETIVE PLAN (1996)

This plan describes an interpretive vision for Zion National Park and describes how the National Park Service will provide information about Zion to visitors, orient visitors to the park, and interpret park themes for visitors. An additional purpose of this plan is to provide guidance for subsequent designs of interpretive media, exhibits, and structures. Future updates and implementation of the interpretive plan will be influenced by the desired visitor experiences and resource conditions identified in this plan.

DEVELOPMENT CONCEPT PLAN / ENVIRONMENTAL ASSESSMENT, ZION CANYON HEADQUARTERS AND FINDING OF NO SIGNIFICANT IMPACT (1994)

The development concept plan addressed the future of park developments in the headquarters area and south entrance. The plan focused on reducing vehicular congestion in Zion Canyon. Most of the plan described a proposed shuttle bus system. The development concept plan also called for eventually extending this system to the east side of the park. In addition to transportation, the 1994 plan called for several additional developments, including new employee housing in the Watchman housing area, a permanent research facility, a plant nursery, and an emergency service facility, to be built near the existing park headquarters. Portions of this plan, such as the employee housing directions, were modified by the 1997 *Zion Canyon Transportation System Environmental Assessment*.

RESOURCE MANAGEMENT PLAN, ZION NATIONAL PARK (1994)

The resource management plan tiers off the long-term goals identified in legal mandates, other park plans, and NPS policies. It is intended to describe

how long-term resource goals will be achieved in Zion and thus provides a working foundation for resource management actions in the park. The plan provides an overview of the park's natural, cultural, and physical resources; analyzes resource management needs; and prescribes long-term strategies to address the park's most important resource problems and research needs. The resource management plan identifies specific actions and assigns them priorities. These actions are updated on a regular basis. The existing (1994) resource management plan will be revised as needed to incorporate the management directions provided by this document.

LAND PROTECTION PLAN, ZION NATIONAL PARK (1984)

Land protection plans are developed for each park containing nonfederal lands or interests that may be subject to acquisition. Land acquisition is guided by a park's land protection plan. Zion's land protection plan identified nonfederal lands and interests within the park's boundaries and provided examples of compatible and incompatible uses of those lands. Alternative land protection techniques were examined and evaluated for protecting park values and meeting management objectives. The plan established priorities for acquisition of land or interests within the park boundary and made recommendations for short- and long-term actions. It noted that the National Park Service will not seek to acquire any interest in private lands without the consent of the owner as long as these lands are devoted to uses that are compatible with the park. The action alternatives in the *Final General Management Plan / Environmental Impact Statement* shows how the National Park Service would like to manage the nonfederal lands within the park boundary if and when they are acquired.

WILD AND SCENIC RIVER REVIEWS IN THE STATE OF UTAH (1996-1997)

In December 1994, the Bureau of Land Management (BLM), U.S. Forest Service, and National Park Service agreed to develop a common process and criteria for determining the eligibility and suitability of Utah rivers for potential inclusion in the national wild and scenic rivers system. A

uniform methodology was published in 1996, which the three agencies are using to prepare wild and scenic river eligibility assessments in the state (USFS et al. 1996). In 1997, the Bureau of Land Management, U.S. Forest Service, National Park Service, and the state of Utah agreed in a memorandum of understanding to cooperate in conducting wild and scenic river studies. The National Park Service and Bureau of Land Management also signed an agreement to conduct joint eligibility determinations and suitability recommendations for six small BLM river segments adjacent to and upstream of Zion. The 1996 interagency eligibility criteria and process were used to assess the rivers and streams in Zion and on the six adjacent BLM segments. The *Final General Management Plan / Environmental Impact Statement* includes the eligibility determinations for these rivers and streams, as well as suitability determinations for wild and scenic river designations.

DIXIE RESOURCE AREA. PROPOSED RESOURCE MANAGEMENT PLAN AND FINAL ENVIRONMENTAL IMPACT STATEMENT (1998)

This plan establishes land use allocations and management guidelines for Bureau of Land Management (BLM) administered land in the Dixie Resource Area, which indirectly affects much of Zion National Park due to its proximity. The plan primarily focuses on land use prescriptions for BLM lands in Washington County in light of the direct, indirect, and cumulative effects of rapid urban growth. The plan has a 20-year time frame. Management objectives, decisions, and allocations are presented for such topics as land transfers, transportation, recreation, wilderness, livestock grazing, and fish and wildlife habitat. The *Final General Management Plan / Environmental Impact Statement* is proposing boundary adjustments that would affect several BLM tracts covered by the Dixie Resource Area plan. The National Park Service and Bureau of Land Management also agreed to jointly study the eligibility and suitability for designating several drainages on BLM lands adjacent to the park as wild and scenic rivers. The findings of this study may affect the *Dixie Resource Area Resource Management Plan*.

APPENDIX D: DEFINITIONS OF THE MANAGEMENT ZONES



FRONT-COUNTRY HIGH DEVELOPMENT ZONE

This zone would provide visitors with highly structured opportunities to enjoy and learn about the park by means of motorized, primary roads. In essence, visitors would feel as though they were in a pocket of civilization surrounded by the park's natural beauty. A wide array of visitor services and facilities would be available. The experience would be highly social. Both natural processes and the natural landscape would be highly modified.

Resource Conditions

Natural processes and the landscape would be greatly altered to accommodate visitors and support park operations. Throughout the area, resources may be altered or manipulated whenever necessary to restore damaged areas, preserve/maintain cultural resources, or to direct visitor use and minimize human impacts. All alterations, however, should

blend in with the surrounding landscape or facilities to the extent possible.

Visitor Experience

Visitors would view the park landscape from the relative comfort of motor vehicles and highly developed facilities. Transportation, lodging, camping, orientation information, and a wide variety of other services would be readily available to help visitors learn about and enjoy the park's resources. Visitors would feel secure in a developed environment. The visitor experience generally would be highly social with frequent interaction among visitors and between visitors and park staff. Although there may be some opportunity for solitude at certain times of the day, particularly during the off-peak season, encounters with others would be more likely compared to other management zones. Throughout the year, the only limits on numbers of people or on group size that could be encountered, both day and

night, would be due to resource protection concerns or facility design capacities. Visitors would stay overnight in campgrounds or lodges. Because of the close proximity of facilities and services, visitors would not need to have a high degree of self-reliance or outdoor skills. Travel would occur mainly along primary or secondary roads or on walkways connecting facilities.

Management and Scientific Uses

Most management actions would focus on maintaining facilities and providing high quality visitor experiences, with a secondary focus on mitigating impacts from human use. Actions that may be taken to manage visitors include: directing or limiting use via signs, fences, or pathways; educating visitors; and encouraging behaviors that protect resources and maintain visitor safety. Research and resource management activities also would be permitted, with some restrictions. Many types of equipment would be allowed for scientific and management purposes, although how, when, and where they would be used may be restricted. Fee collection would take place in this zone. For both research and administrative purposes, the number of people would be limited if there are resource protection concerns or by the design capacity of the facilities.

Appropriate Kinds of Activities and Development

Visitors could participate in a wide variety of highly structured and facility-dependent recreational activities. These activities would revolve mainly around going to a visitor center, enjoying motorized sightseeing, and camping in a developed campground or staying overnight in a lodge. Other activities could also include walking, bicycling on roads or designated trails, watching wildlife, and viewing selected cultural sites. The use of nonmotorized watercraft (e.g., kayaks), climbing, and canyoneering would be permitted, although these activities may be restricted or prohibited at certain times and locations. Day use of saddle stock may be allowed in designated areas and at designated times. Nonmotorized winter activities would be permitted on trails and designated areas. Commercial filming may be permitted provided it is consistent with the desired resource and social conditions described

above for the zone. Group activities (e.g., weddings, reunions) may occur with a special use permit.

A broad range of formal interpretive, education, and orientation programs, facilities, and information would be provided in this zone. Guided and self-guided activities may also be provided. For example, slide programs, guided walks and tours, live presentations, exhibits, publications, cooperating association sales (e.g., sales of park resource-related interpretive materials), and some nature trails could be found here. Educational programs and workshops could also be accommodated (e.g., Junior Ranger program, Elderhostel, painting and photography workshops). The greatest variety of park-appropriate development would be found in the frontcountry high development zone. Additionally, the greatest number and highest concentration of facilities would be found here. This is the only zone where full-service visitor centers and developed campgrounds (with electricity, sewage dump stations, and showers) could occur. The existing lodge, gift shop, and restaurant would be in this zone. Sprinkler systems, housing, and exterior lighting also would be permitted in this zone. (Exterior lighting would be the minimum needed for visitor safety in order to minimize impacts on night sky viewing.) Other types of appropriate visitor facilities may include focused visitor facilities, paved or hardened walkway, nature trails and river put-in or take-out sites, restrooms, developed picnic areas, and interpretive facilities. Several other types of developments, including corrals, barns, entrance stations, utility lines, irrigation systems, diversion dams, and other structures associated with park operations and maintenance, may be permitted in this zone. Culturally significant resources, including historic structures, may be used for administrative purposes.



FRONTCOUNTRY LOW DEVELOPMENT ZONE

Visitors would have a fairly structured rural experience oriented around motorized sightseeing, camping, picnicking, and taking short walks. Basic facilities and services would be provided, but they would be fewer and less concentrated than in the frontcountry high development zone. There would be few opportunities for solitude, but the social environment would remain uncrowded. Natural conditions would be unmodified in most of the zone.

Resource Condition

Natural processes and landscapes would be unaltered, except within or directly adjacent to the limited number of developed sites. In developed areas, natural processes and landscapes may be altered or manipulated when necessary to restore damaged areas, to preserve or maintain cultural resources, or to direct visitor use to avoid resource impacts. All alterations would be designed to blend in with the natural landscape.

Visitor Experience

In this zone visitors would experience the park while in or near their vehicles and with the aid of some basic services and facilities. Visitors would feel they were part of the natural landscape, while also having the security of knowing other people and facilities are nearby. Sights and sounds of people and some vehicles would be expected. Although there would be few opportunities for solitude and the probability of encountering other people or NPS staff would be moderate, the social experience

would be uncrowded. Throughout the year, the only limits on numbers of people or on group size that could be encountered, both day and night, would be due to resource protection concerns or facility design capacities. At night, people could camp in campgrounds, but no lodging would be available. Basic necessities and conveniences would be provided; therefore, visitors would not need a high degree of self-reliance or outdoor skills. Travel generally would be by motor vehicle along secondary roads, or by foot or bicycle on short trails.

Management and Scientific Uses

Management and scientific uses would be the same as described for the frontcountry high development zone.

Appropriate Kinds of Activities and Development

Most activities would be somewhat structured, with the visitor experience oriented around motorized sightseeing, camping in campgrounds, picnicking, and taking short walks. Non-motorized watercraft use, bicycling on roads or designated trails, climbing, canyoneering, viewing selected cultural sites, nonmotorized winter activities, commercial filming, and group activities generally would be permitted, with some restrictions or prohibitions possible. Day use of saddle stock may be permitted on designated trails and at designated times. A wide range of interpretive, educational, and orientation programs, facilities, and information would be provided, but to a lesser extent than in the frontcountry high development zone. Unlike the frontcountry high development zone, lodging, conferences, food sales, and gift sales would be prohibited. The types of development permitted would be similar to those in the frontcountry high development zone, but they would be less concentrated and generally more primitive. For example, only secondary roads would be present—roads may be paved, but would be designed to maintain the rural setting, with low traffic volumes and slow speeds. Picnic sites (tables) would be limited to a cumulative total of ten sites per zoned area. Campgrounds would not have electricity, sewer dump stations, or showers. Focused visitor facilities may be present to provide visitors with park orientation information or to interpret

specific park resources. The following types of developments would not be allowed: sprinkler systems, exterior lighting, full-service visitor centers, lodges, gift shops, and restaurants. Existing historical features (e.g., orchards, irrigation ditches) may be maintained. Culturally significant resources, including historical structures, may be used for administrative purposes.



TRANSITION ZONE

The main purpose of this zone would be to allow visitors to view or directly access many of the park's prime resources by means of nonmotorized, maintained, high-use trails. This would be a day-use zone. Only minimal facilities (e.g., trails) would be present. Visitor use would be concentrated within or near these facilities, leaving the rest of the landscape largely undisturbed and the resources protected.

Resource Conditions

Natural processes would likely be altered to a greater degree than in the primitive and pristine zones, but less so than in the frontcountry high and low development zones. For example, culverts could be constructed to direct the flow of water under a trail, although other types of stream channelization could not occur. (However, channelization could continue in the section of the North Fork of the Virgin River flowing through the main Zion Canyon.) Some parts of the natural landscape may be altered by hardening them or shielding them from impacts (e.g., surfacing trails or campsites,

putting in water bars, installing toilets). As in the frontcountry low development zone, natural processes and landscapes may be altered or manipulated in developed areas in the transition zone when necessary to restore damaged areas, to preserve or maintain cultural resources, or to direct visitor use to avoid resource impacts. All alterations would be designed to blend in with the natural landscape.

Visitor Experience

Visitors would have opportunities to view or directly access many of the park's prime resources via well-developed trails. Visitors would have a sense of being in a natural landscape, although during the peak season there would be a low expectation of solitude due to the sights and sounds of other people. The probability of encountering other people and NPS staff would be high, but crowding levels would not keep visitors from reaching desired destinations or viewing outstanding park features. Throughout the year, the only limits on day use—numbers of people or group sizes that could be encountered—would be due to resource protection concerns or facility design capacities. This zone generally would be closer to conveniences and easier to access than the primitive and pristine zones; therefore, visitors would need only a low to moderate degree of self-reliance and basic outdoor skills. Travel generally would be on foot and largely directed via surfaced trails, and other clearly delineated routes over land or water.

Management and Scientific Uses

Management actions would focus on maintaining visitor facilities, mitigating impacts from human use, and providing for quality visitor experiences. In order to avoid resource impacts, actions may be taken to manage visitors, including designating overnight use areas, directing or limiting use via safety rails or chains, fences, and other barriers, and educating and encouraging behaviors that protect resources and maintain visitor safety. Research and resource management activities also would be permitted, with some restrictions. Most types of equipment and small motorized vehicles that do not exceed the trail widths would be allowed. However, when and where equipment would be used for management or scientific purposes may be restricted.

ed. For both research and administrative purposes, day use group size would be limited by resource protection concerns or facility design capacities; the size of overnight groups would be limited to no more than eight people.

Appropriate Kinds of Activities and Development

Only nonmotorized visitor uses could occur in a transition zone, such as hiking and backpacking. In this zone, day use activities would have precedence over overnight uses. Day use of saddle stock would be permitted on designated trails at designated times. Watercraft use, climbing, and canyoneering, nonmotorized winter activities, viewing selected cultural sites, and commercial filming generally would be permitted, with some restrictions or prohibitions possible. Group activities such as weddings would not be allowed. A moderate range of interpretive services may be available, including formal guided walks, informal patrols, outdoor exhibits and bulletin boards, signs, trail guides, and various educational programs.

The types and level of development in the transition

zone would be limited. Appropriate types of visitor facilities would include: pit toilets; developed trailheads; clearly delineated routes over land or water; surfaced trails, overlooks, and destination points; bridges; and interpretive and informational signs. Management structures would be limited to irrigation ditches, springhead boxes, river gauges, gabions, trail culverts, diversion dams, research enclosures, radio repeaters, fences, safety rails, chains, or other such barricades. Except for historic structures listed or eligible for listing on the National Register of Historic Places, no utility-related structures, cabins or large buildings, or other more developed "frontcountry" facilities would be allowed. Only those roads that allow access to private property would be permitted, although these roads would be gated and open only to landowners and their guests. Culturally significant resources, including historic structures, may be used for administrative purposes.

PRIMITIVE ZONE

This zone would provide better opportunities for visitors to experience wildlands and solitude than



the zones described above. The landscape would be largely undisturbed, with natural processes predominating. However, compared to the pristine zone, access would be easier into this zone, there would be signs of people, and the area would feel less remote.

Resource Condition

Natural processes and the landscape would be unaltered in the primitive zone, except for a few minimal developments such as primitive trails and designated campsites. Little evidence of recreational impacts would be tolerated. Resources may be altered or manipulated if necessary to restore areas that have been disturbed. Some resources may be altered to preserve maintain cultural resources, but such changes would be kept to the minimum extent possible. A few resources also may be manipulated to direct visitors to avoid resource impacts, but they would be subtle and harmonize with the natural environment (e.g., building native plant barriers).

Visitor Experience

Visitors would have opportunities in the primitive zone to experience Zion's wildlands with limited assistance. There would be a sense of being immersed in a natural landscape with a moderate sense of solitude. Natural sights and sounds would be almost all that one sees and hears. The probability of encountering other people, and NPS staff would be moderate throughout the year. Generally a visitor would encounter no more than twelve groups per day. The interim hiker group size limit for day and overnight use would be 12 or fewer individuals. For saddle stock parties, the interim group size would be a maximum of six saddle stock and six people per group. At night people could camp out of sight of others. Because this zone would be farther from conveniences, visitors would need to have a high degree of self-reliance, and more advanced outdoor skills may be necessary (e.g., route-finding or canyoneering ability). However, travel would be largely directed via primitive trails and routes over land and in streams.

Management and Scientific Uses

Most of the management actions in this zone would

be devoted to protecting resources, minimizing, or avoiding potential impacts from visitors, and restoring disturbed areas. Actions that may be taken to manage visitors include setting group size limits, designating camping sites, restricting off-trail use, and encouraging behaviors that protect resources. Research and resource management activities would be permitted, with some restrictions. For both research and administrative purposes, all groups would be limited to no more than eight people. Motorized equipment and the use of aircraft to access the zone generally would not be permitted, as per the Wilderness Act and NPS policies.

Appropriate Kinds of Activities and Development

With the exception of interpretive activities and bicycling, the same types of nonmotorized visitor activities described in the transition zone could occur in the primitive zone (although there may be different qualifications, restrictions, or prohibitions on visitor activities). Only limited opportunities may be provided for formal guided interpretive walks. No bicycling would be permitted. However, day use of saddle stock would be permitted on designated trails and at designated times. Off-trail use of saddle stock would be permitted only in designated areas. Overnight camping with saddle stock would be permitted only at designated sites. There would be very little development, either to support visitors or for management purposes. Narrow, unpaved trails and/or routes would be maintained (paved trails that existed at the time of zoning are an exception to this rule). Some designated campsites and other facilities may be provided for the purpose of protecting resources rather than for the convenience of visitors (e.g., pit toilets and stream crossings, but not bridges). Some undeveloped river put-in and take-out points may be designated to minimize the potential for resource impacts. Informational directional signs also may be provided when deemed necessary for human safety and resource protection; however, interpretive signs would not be present. Some administrative facilities may be maintained if they are needed for parkwide management (e.g., radio repeaters, weather stations, existing water collection devices, river gauges). Culturally significant resources, including historic structures, may be used for administrative purposes.



PRISTINE ZONE

The pristine zone would offer the feeling of being entirely alone in Zion's remote and isolated wildlands. This zone would provide visitors a chance to experience a natural landscape. Use of these areas would be low, and group encounters infrequent.

Resource Condition

Land in this zone would be managed to perpetuate natural conditions and processes, undisturbed by people. There would be very little tolerance for uses or actions that would disturb or alter resources and natural processes; the only sign that others have used the area may be faint hiking routes and bolts on climbing routes. However, some resources may be altered or manipulated if necessary to restore areas that have been disturbed, or to preserve maintain cultural resources.

Visitor Experience

Visitors would have the sense of being immersed in a totally natural landscape. With virtually no evi-

dence of others passing through this zone, some visitors might feel like they were the first humans to explore this area. Only natural sights and sounds would be seen and heard. There would be a strong sense of isolation and remoteness. The probability of encountering other people or NPS staff would be very low throughout the year. For example, visitors would not usually expect to encounter any other groups either during the day or at night. The interim group size limit would be a maximum of 12 people per group. Because visitors would not find conveniences and other people in this zone, they would need to be entirely self-reliant and possess a high level of outdoor skills—route-finding and canyoneering abilities would be essential.

Management and Scientific Use

Management in the pristine zone would be aimed primarily at protecting park resources, while still ensuring that visitors have a high-quality experience. Minimal administrative use would occur, such as restoration of disturbed areas, search and rescue, and monitoring of endangered species. However, providing the type of desired visitor experience

would require a high degree of management of visitors outside of the zone. For example, visitor levels would need to be highly managed to ensure that visitor encounters are minimized. If impacts occur due to visitor use, there would be increased management of visitors (e.g., required orientations, use restrictions, temporary closures).

Long-term inventory and monitoring and resource management to mitigate human impacts or preserve cultural resources would occur in this zone. Other types of research may take place if this zone is considered to be the only, or best suitable, area for that research. All research activities would require a project research proposal that would be subject to internal (National Park Service) and external peer review.

For both research and administrative purposes, the size of groups and the total number of groups would be the same as described for visitors in this zone. Motorized equipment and the use of aircraft to access the zone generally would not be permitted, as per the Wilderness Act and NPS policy.

Appropriate Activities and Development

Hiking, backpacking, climbing, canyoneering, cross-country skiing, snowshoeing, and nonmotorized watercraft use would be permitted, with restrictions or prohibitions possible at certain times and locations. Commercial filming may be permitted, provided it is consistent with the desired conditions and intent of the zone. No commercial recreational activities, motorized mechanical uses, or saddle stock would be permitted in order to minimize impacts to other visitors and the resources. Interpretive educational services also would not be provided in the pristine zone.

No visitor developments generally would be present, including campsites, signs, or maintained river put-in take-out. However, routes and paths may be defined and maintained if necessary to prevent resource damage. Faint hiking routes and climbing bolts would be permitted. Administrative developments generally would not be permitted, with the possible exception of existing radio repeaters that are essential for parkwide management. Culturally significant resources, including historic structures,

may be maintained but would not be used for administrative or other purposes.



RESEARCH NATURAL AREA (RNA)

This zone applies the intent of the national network of "research natural areas," which are field ecological areas designated primarily for research and education and or to maintain biological diversity. Research natural area zones would be applied in areas with little to no human disturbance. Baseline inventory and long-term ecological observations would be emphasized in this zone, with the primary purpose of creating an ecological environmental benchmark over time. This zone would not be open to recreational use, but may be open to educational uses.

Resource Condition

This zone is located in areas that are prime examples of natural ecosystems and areas with significant genetic resources with value for long-term

baseline observational studies or as control areas. The areas would exhibit little evidence of human disturbance, although they would be relatively accessible (with the exception of the isolated mesa tops). Limited manipulations may be allowed, provided the intent is to restore the area to more natural conditions (such as when using prescribed fire), or to preserve maintain significant cultural resources (such as when conducting archeological research).

Visitor Experience

Any areas included in this designation would be closed to all recreational uses. Educational trips may be authorized under established RNA guidelines, subject to justification, documentation, and internal review.

Management and Scientific Uses

All management and scientific uses in research natural areas would require a project research proposal that would be subject to internal (National Park Service) and external peer review. Long-term inventory and monitoring, and resource management to mitigate human impacts or preserve cultural resources would occur. Other types of research, sampling, or collection may occur if it is considered to be the only, or best suitable, area for accomplishing the research objectives. Limited administrative uses (e.g., search and rescue) would be permitted, but would be infrequent and last only a short time. For both research and administrative activities, the interim limit would be 12 or fewer individuals. The total number of groups would be established in the carrying capacity studies and the wilderness management planning process. Motorized equipment and the use of aircraft to access the zone generally would not be permitted, as per the Wilderness Act and NPS policies.

Appropriate Kinds of Activities and Development

Although this zone would be closed to general public use, some interpretation of the areas may occur outside of the zone, such as explaining the benefits and use of benchmark environmental monitoring sites as land management tools. Camping and trail construction would not be allowed, except to pro-

vide essential access to established research facilities. Temporary research equipment (e.g., stream gauging stations, meteorological equipment) would be permitted if there is no practical alternative for achieving research goals, and where consistent with the wilderness management plan, the Wilderness Act, and other park documents (e.g., the "Resource Management Plan").



ADMINISTRATION ZONE

The primary purpose of this zone would be to support the management and administration of the park. General visitation would not occur, although some visitors may access these facilities areas to obtain staff assistance or to solve a problem. The level of facility development and concentration would vary as needed to provide for park operations; the degree of modification of natural processes and landscapes also would vary.

Resource Condition

Natural processes and the landscape would be altered to support park operations; the degree of alteration would be dependent on need. Resources may be altered or manipulated whenever necessary to restore damaged areas, to preserve maintain cultural resources, or to direct use in order to avoid resource impacts. However, all alterations should blend in visually with the surrounding landscape or facilities to the extent possible.

Visitor Experience

General public visitation would not be encouraged, because this zone would be intended to serve primarily administrative functions. However, some visitors may have access to obtain staff assistance or to solve a problem.

Management and Scientific Uses

Most management activities would be devoted to maintaining park facilities and for park operations. Research and resource management activities would be permitted with some restrictions. Most types of equipment would be allowed for scientific and management purposes, although how, when, and where the equipment is used may be restricted. For both research and administrative purposes, the number of people would be limited if there are resource protection concerns or by the physical capacity of the facilities.

Appropriate Kinds of Activities and Development

Because the public would seldom be in this zone, there would be no interpretive, educational, or orientation facilities or services; however, orientation information, such as signs, may be present to direct visitors where to go for assistance. The type, level, and concentration of administrative facilities would depend on the requirements for park operations, and generally would be the same as in the frontcountry high development zone.

APPENDIX E: DEVELOPMENT OF THE PLAN

Work on the *General Management Plan / Environmental Impact Statement* (plan/EIS) began in the spring of 1996. The planning team consisted of park staff and interdisciplinary specialists from the Denver Service Center (the planning, design, and construction center for the National Park Service) and the Harpers Ferry Interpretive Design Center. The planning team used the visitor experience and resource protection (carrying capacity) framework in developing the Zion plan/EIS.

The first step in the planning process was to identify the purposes of the plan and mandates and constraints for planning, and to scope the issues and concerns that needed to be addressed in the plan.

The next major step was to develop a range of reasonable alternatives for managing the park and to identify a preferred alternative for the park. The planning team went through an iterative process in developing the draft alternatives. First, the planning team gathered and analyzed information on existing visitor use and park resources, and identified key issues facing the park. With this information, the team developed an initial range of alternatives for managing the park's visitors and natural and cultural resources. The alternatives were then compared in terms of how well they achieved several criteria. Using this comparison as a starting point, the team developed a preferred alternative, which reflected the preferred vision for managing the park over the next 20 years. At this point, the team also narrowed the range of alternatives, and revised the remaining alternatives. Throughout the process, newsletters were distributed to share information and to solicit the views and concerns of interested citizens.

ANALYZING EXISTING VISITOR USE AND PARK RESOURCES

To better understand the park and the issues facing it, as well as to understand the options available for resolving the issues, the planning team first analyzed visitor use and resource data. Visitor use statistics such as trends in lodge and campground

use, backcountry camping, and vehicle traffic were gathered and studied. The planning team also estimated day and overnight visitor use levels and distributions in the park based on earlier studies, professional judgment, and data from the existing overnight permit system. Areas where visitors or park staff have noted problems in the past were discussed, as were the probable underlying causes of these problems.

At the same time, natural and cultural resources were evaluated. A computerized geographic information system (GIS) was used to store, display, manipulate and analyze spatial resource data. The sensitivity and value analyses described below incorporated GIS data sets of six cultural and twelve natural resources. The resources are listed below:

Natural Resources

- Bodies of water (ponds, lakes)
- Microbiotic soils
- Streams (rivers, creeks, drainages)
- Soils
- Vegetation types (riparian, mixed coniferous forest, mountain shrub, piñon-juniper, desert scrub, hanging gardens, rock crevice)
- Rare plants
- Virgin River spinedace
- Southwest willow flycatcher
- Desert tortoise
- Bighorn sheep
- Zion snail
- Mexican spotted owl

Cultural Resources

- Anasazi structural features
- Pueblo artifacts
- Lithic scatters
- Rock art
- Pioneer
- Historic National Park Service

Many of the GIS resource layers used in the analyses were created from existing inventories, in-

cluding the Peregrine falcon, Virgin River spinedace, vegetation types, streams, bodies of water, soils, and surface geology layers. However, inventories of all cultural resources and several natural resources (e.g., Mexican spotted owl, desert tortoise, leopard frog, southwest willow flycatcher, bighorn sheep, microbiotic soils) have not been done. GIS models were developed to predict the presence of the resources with less than 100 percent inventories. This resulted in the development of data layers with contiguous and unbroken coverage within the park for all 18 natural and cultural resources used in the analyses.

The accuracy and quality of each data set were assessed to validate the GIS model results. This assessment was based on statistical analyses and professional opinion from park resource management staff and several local area experts. An analysis of resources that are sensitive to human use was conducted using the GIS resource data layers. Maps were created that highlighted park areas sensitive to human use in terms of the cultural resources, natural resources, or both cultural and natural resources combined.

A similar analysis was conducted in which cultural and natural resource values were mapped. Value ratings for each resource were based on set ecological and park significance criteria developed by the park staff. (The soils data layer was used only in the sensitivity analysis because the value of all soil types was considered equal.)

The resource sensitivity and values analyses were later consulted when decisions were made about how to place zones and facilities in different alternatives.

DEVELOPING THE INITIAL RANGE OF ALTERNATIVES

The issues to be covered by the plan and the analysis of existing conditions were two considerations in developing the range of alternatives for management of the park. Other considerations were the park's purposes and significance, the NPS mission and policies, legal mandates, and public input on how the park should be managed.

Development of the draft management alternatives also was guided by several assumptions or "givens:"

- Existing major developments in the park will remain, although their function may change. The Zion-Mt. Carmel Highway, between the south and east entrances of the park, will continue to be maintained and be open to through traffic.
- The main canyon road and facilities up to the lodge area will always be in a frontcountry zone; however, the area north of the lodge could change.
- The Zion Canyon shuttle system is implemented as described in the 1997 *Zion Canyon Transportation System Environmental Assessment*. With the implementation of the Zion Canyon shuttle system, private vehicles will not be allowed in the canyon during the summer.
- Major new facilities, such as campgrounds, lodges, roads, and visitor centers, will not be built within the park, aside from those associated with the transportation system and possibly a visitor center on the park's east side. The private sector will provide camping facilities outside of the park.
- New park developments proposed in this plan will be built in disturbed areas whenever possible. Mitigation measures will be taken to avoid sensitive areas, such as threatened and endangered species habitats, and archeological sites.
- Activities in a management zone that is within the recommended wilderness will conform to provisions of the Wilderness Act.
- The park's wilderness proposal may be adjusted through this planning process.

One of the first steps in developing the alternatives was to create potential management zones, which describe how different areas of the park can be managed to achieve desired resource and social conditions and serve recreational needs. The planning team identified seven potential management zones: frontcountry high development; frontcountry low development; transition; primitive; pristine; resource reserve; and administration.

The next step was to identify preliminary alternative concepts for management of the park. The concepts form the core of the management alternatives for Zion. They describe possible directions for the future of the park and guide how the management zones would be applied "on the ground" in the park. The planning team identified five preliminary alternative concepts.

The seven management zones and five preliminary alternative concepts were presented for public review and comment in a newsletter.

After receiving the public's comments, the team revised the management zones and added a new "semiprimitive" zone; the preliminary concepts were not changed. The team then placed the zones "on the ground" in the park in different ways to reflect the five preliminary concepts. For each management concept, the team also developed a list of actions that would be taken to implement the zoning scheme. The end result of this work was the creation of five draft management alternatives:

- alternative A provided additional opportunities for use and access
- alternative B concentrated use in the park
- alternative C reduced use while still providing for a diversity of visitor experiences.
- alternative D emphasized resource protection
- alternative E called for minimal changes to park conditions as they were in 1997

All of the draft management alternatives supported the park's purposes and significance, addressed the identified issues, and responded to public desires and concerns; however, each alternative differed in the compromises or tradeoffs made between preserving resources and accommodating visitor use.

As required by the National Environmental Policy Act, the National Park Service also developed a sixth no-action alternative. This alternative reflected how the park is currently managed and would be managed in the future if no changes occurred. It also provided a basis for comparing the other alternatives.

The five draft-management alternatives (the "action" alternatives), and the no-action alternative were described in an alternatives workbook. Public

comments, concerns, and ideas were then sought on the alternatives.

DEVELOPING THE PREFERRED ALTERNATIVE

The next major task in the planning process was developing a preferred alternative—the NPS preferred approach for managing the park over the next 20 years. In order to develop a preliminary preferred alternative, the five draft alternatives that had been reviewed by the public were evaluated using an objective analysis process called "Choosing By Advantages" (CBA). This process evaluates different choices (in this case the five preliminary action alternatives) by identifying and comparing the relative advantages of each according to a set of goals and relevant facts.

Only the zoning schemes presented under each of the five management alternatives were considered in Zion's CBA evaluation, not the specific implementation actions. This is because the zoning schemes describe the desired future conditions for the entire park (the level of visitor use, resource conditions, management activities, etc.) and are expected to remain the same over the life of the plan. The implementation actions, on the other hand, describe how the park staff could meet the desired conditions. These actions could change in the future with the advent of new information and technology.

The first step in the CBA process was to develop the criteria that would be used to compare the alternatives. The criteria were based on park purposes and significance, laws and policies, and the concerns and comments commonly expressed by the public and park staff about the draft management alternatives. The team identified five criteria by which to evaluate the alternatives. The criteria were how well each alternative:

- preserved and protected natural resources and processes
- preserved and protected historic buildings, structures, and features
- preserved and protected known archeological sites
- provided for wilderness values and conditions

- provided for visitor enjoyment and education through a wide range of appropriate visitor opportunities and facilitated visitor access to the park

For each criterion, the team identified the advantages of an alternative based on the specific characteristics or consequences of that alternative ("relevant facts"). Each advantage was given a point value that reflected its importance when compared to the advantages of the other alternatives. By adding up the advantage scores for each alternative, the team was able to determine how the alternatives compared overall.

After completing the CBA scoring for all five draft alternatives, alternatives D and E had the highest total advantage ratings. Alternative E rated lower than D for the goals related to visitor archeological resources and natural resources. The team concluded that alternative D was the closest to the direction a preferred alternative should take; however, alternative D rated relatively low for the goals related to visitor enjoyment and education, wilderness, and historic resources. Therefore, the team developed a new alternative—the preferred alternative. This alternative was similar to alternative D, but better provided for visitor enjoyment, improved wilderness conditions and values, and better protected historic resources.

NARROWING THE RANGE OF ALTERNATIVES AND REVISING THE REMAINING ALTERNATIVES

In addition to identifying the preferred alternative, the planning team used "Choosing By Advantages" and other information to narrow the range of alternatives. After analyzing the advantages of the alternatives relative to each other for achieving park purposes and NPS policies (i.e., preserving and protecting cultural and natural resources, providing for visitor enjoyment and education, providing for wilderness values), the advantages of alternatives B and C were determined to be the same as or better in at least one of the other action alternatives. Neither alternative B or C had the greatest advantage compared to the other alternatives. (Alternative C was the least favored of all the alternatives.) In addition, neither of these alternatives was highly favored by the public based on the responses to the

alternatives workbook. The planning team also was able to include those elements in alternatives B and C with high advantages in the other action alternatives.

Based on further analysis, the planning team also discarded alternative E. Alternative E was dropped because it was almost identical with the preferred alternative—there were very few differences in the management directions and zoning schemes that distinguished the two alternatives.

The planning team ended up with four alternatives for managing Zion National Park:

- the National Park Service's preferred alternative
- alternative A, which provides additional opportunities for use and access
- alternative D (renamed alternative B in this document), which emphasizes resource protection.
- a no-action alternative

Revisions to the Range of Zones and the Alternative Zoning Allocations

After analyzing the alternatives using the CBA process, the planning team revised the original range of zones. The semiprimitive management zone was dropped because the zone did not differ significantly from the primitive management zone other than for use levels. All areas where the semiprimitive zone was applied under each alternative were rezoned as primitive.

The planning team initially had decided to eliminate the existing administratively designated research natural areas in the park, which were set aside to protect the ecological integrity of areas for research purposes. However, after further consideration the team decided to retain this designation. The team consequently developed a new zone that reflects National Park Service direction on the management of research natural areas. This zone, appropriately enough, is called the research natural area zone. The former resource reserve zone was replaced by this new zone.

With the elimination of alternatives B, C, and E, some of the distinctions between how key areas of

the park were zoned could have been lost. To avoid this, the planning team made several changes to zoning schemes (i.e., how the zones were allocated on the ground) for alternatives A and D.

Revisions to the Implementation Actions Component of the Remaining Alternatives

After completing the CBA analysis, the planning team also reviewed the implementation actions that had been described for each alternative in the October 1997 alternatives workbook. The team felt these actions should be better linked to how various areas of the park were zoned under each alternative (i.e., the desired conditions). Therefore, the key actions listed in the workbook were replaced with a description of needed or allowable actions related to how specific areas of the park were zoned (i.e., "zone-specific management strategies"). The planning team felt this information would give the public a more tangible sense of what the zoning alternatives could mean on-the-ground, an idea of the magnitude of the changes proposed under each alternative, and allow a more meaningful comparison of the alternatives.

General management strategies were also developed to provide more guidance about how

visitors, resources, and facilities would be managed parkwide.

COMPLETION OF THE FINAL PLAN

After the public review period ended on the draft plan, the planning team reviewed and analyzed all the oral and written public comments it received on the draft. Changes were made in the draft to clarify points, correct errors and omissions, and provide the rationale for decisions. A number of changes were also made to the management zones and to all the alternatives (e.g., treatment of the recommended wilderness area). The preferred alternative was revised in several places to address the concerns of the planning team and the public: for example, management of Parunuweap Canyon. (Please see the "Consultation and Coordination" chapter for a list of the major changes made to the draft plan.)

The *Final General Management Plan / Environmental Impact Statement* includes the revised four management alternatives, an analysis of their environmental consequences, agency and organizations' comments on the draft plan, and the National Park Service's responses to those comments.

APPENDIX F: WILD AND SCENIC RIVER EVALUATION — ELIGIBILITY, CLASSIFICATION, SUITABILITY REPORT

National Park Service

Bureau of Land Management (Cooperating Agency)

APPENDIXES

INTRODUCTION

This report presents the results of the National Park Service's (NPS) study of potential wild and scenic rivers in Zion National Park. The purpose of this study is to determine whether any of these rivers should be recommended for inclusion in the national wild and scenic rivers system.

Seven rivers—each including the main stem and major tributaries—were evaluated within the park. These rivers constitute all of the park's major waterways. As per a 1998 Memorandum of Understanding between the NPS and the Bureau of Land Management (BLM), this study also evaluated six short stream segments outside of national park boundaries on lands administered by the BLM. Total river mileage of the six BLM segments is 2.3 miles (see table F-3). These river segments are upstream of and contiguous with the park rivers, and were evaluated along with park rivers in the interest of efficiency and holistic resource management. Wild and scenic river determinations for the BLM segments will constitute a land use plan amendment to the *Dixie Resource Area Resource Management Plan* (1998).

The rivers evaluated were:

- North Fork of the Virgin above and below the Temple of Sinawava
- East Fork Virgin River
- Coal Pits Wash
- North Creek
- La Verkin Creek
- Taylor Creek
- Camp Creek

The North Fork of the Virgin River was evaluated in two segments because the character of the river area changes significantly at the Temple of Sinawava.

Five of the seven rivers (and their tributaries) were found eligible and suitable for inclusion in the National Wild and Scenic River System: the North Fork Virgin River above and below the Temple of Sinawava, the East Fork Virgin River, North Creek, La Verkin Creek, and Taylor Creek.

AUTHORITIES

Authorities and guidelines for the evaluation, designation and protection of wild and scenic rivers include: the Wild and Scenic Rivers Act of 1968 (as amended); the Presidential Directive to All Federal Agencies (August 2, 1979); "National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas" (1982); NPS Natural Resource Management and Planning Process Guidelines; Special Directive 90-4 (1990); and 43 CFR 8351. Also, specific to Utah: "Wild and Scenic River Review in the State of Utah: Process and Criteria for Interagency Use" (1996); 1997 memorandum of understanding between the National Park Service, Bureau of Land Management, U.S. Forest Service, and the State of Utah concerning wild and scenic river studies in the state of Utah; and a 1998 memorandum of understanding between the National Park Service and Bureau of Land Management concerning wild and scenic river studies.

STUDY PROCESS

All rivers in the park were evaluated. Each river study corridor included the channels of main stem and major tributaries and the adjacent lands one-quarter mile from each riverbank.

The wild and scenic river study process is composed of three steps:

- determine if rivers are eligible as components of the National Wild and Scenic Rivers System
- determine the appropriate classification of eligible rivers
- determine whether the eligible segments would make suitable additions to the National Wild and Scenic Rivers System

Eligibility

The process used to conduct the eligibility assessment is described in "Wild and Scenic River Review in the State of Utah: Process and Criteria for Interagency Use," July 1996. The process was developed as a collaborative effort between the

National Park Service, Forest Service, and Bureau of Land Management. The intent is "to provide a uniform methodology to be used by the three agencies to obtain consistent results in wild and scenic eligibility assessments made during planning efforts in the state of Utah."

To be eligible for inclusion in the national wild and scenic rivers system, a study segment must be free-flowing and the stream corridor must exhibit at least one "outstandingly remarkable" resource value.

"Free-flowing" means existing in a largely natural condition without major impoundments, diversions, or other modifications of the waterway. There are no specific requirements concerning minimum flow for eligible segments. Flows are considered sufficient for eligibility if they sustain or complement the outstandingly remarkable values for which the segment would be designated. Rivers with intermittent flows have been included in the national system.

Outstandingly remarkable values (ORVs) are scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values that are judged to be regionally significant—those that stand out as among the best on a regional basis. All resources assessed should be directly river-related, or owe their location or existence to the river. Features that are exemplary (outstanding examples of common types), as well as those that are rare or unique, should be considered.

Regional significance was determined within the context of expressly delineated geographic regions specific to each resource being evaluated (see the maps in exhibit 1). A team of 18 subject matter experts from the public and private sectors was assembled for the task of rating the resource values of each river (see exhibit 2). Criteria were developed to assist in the evaluation of each resource (see exhibit 3). These criteria were rated as follows:

- 3 = value is one of the most significant in the region
- 2 = value is typical in the region
- 1 = value is less significant than most in the region
- 0 = value is nonexistent

Once all rivers were rated, two methods were used to determine regional significance:

- For each river resource, rating scores for all the criteria were added and averaged as a whole. A total score of 2.5 and higher indicated an outstandingly remarkable resource value.
- For each river resource, rating scores for each criterion were added, averaged, and rounded to the nearest whole number. Resources that scored a 3 on a majority of the criteria were considered outstandingly remarkable.

The results of these two methods were identical. These results were then inspected to ensure the numerical findings made intuitive sense.

Classification

Four factors are evaluated in classifying eligible rivers: water resources development, shoreline development, accessibility, and water quality. The Wild and Scenic Rivers Act specifies three categories of classification:

- Wild river areas are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- Scenic river areas are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreational river areas are readily accessible by road or railroad, may have some development along their shorelines, and may have undergone some impoundment or diversion in the past.

Suitability

The suitability phase of the study evaluates whether designation as a national wild and scenic river would be the best way to manage eligible rivers. Suitability considerations include the environmental and economic consequences of designation and the manageability of the river if designated.

INTERIM MANAGEMENT

NPS management of stream segments in the park found to be eligible and suitable is sufficient to protect their eligibility, classification, and suitability, pending action on wild and scenic river designation, from any threats that might conceivably originate within the park.

River segments under BLM management that are found to be eligible and suitable will continue to be protected under the authority of section 202 of the Federal Land Policy and Management Act (FLPMA) until this land use plan amendment to the *Dixie Area Resource Area Resource Management Plan* is finalized. At that time, allocative decisions for protection of suitable segments will supersede previous decisions made in the *Dixie Resource Area Resource Management Plan*.

CORRIDOR RESOURCES

Park Setting

Located on the western extremity of the Colorado Plateau Province in southwestern Utah and encompassing the southern and western perimeter of the Kolob Terrace (a southern extension of the Markagunt Plateau), Zion National Park exhibits outstanding exposures of Permian through Cretaceous rocks. Due to the downcutting of the Virgin River, Zion Canyon provides an outstanding display of Triassic and Jurassic sediments, the most spectacular of which is the 2,000-foot thick exposure of Navajo sandstone.

Characterized by high plateaus, a maze of narrow canyons, and striking rock towers and mesas, elevations range from 3,700 feet in Zion's southwestern corner to 8,726 feet (Horse Ranch Mountain) in the northern end of the park. This variation in elevation, combined with myriad springs, streams, and intermittent and permanent water sources, has produced a complex and diverse system of flora and fauna.

To this rich environment were drawn prehistoric cultures, most prominently members of the ancestral pueblo people. Earlier Archaic settlement has been suggested by the presence of isolated artifacts. The Southern Paiutes also occupied the area and were in residence when the first European

Americans reached southern Utah. Evidence of early Mormon settlement, Depression-era construction projects, and other historically significant structures occur throughout the park.

General Resource Significance

Zion National Park's significance statements describe the importance or distinctiveness of the aggregate of resources in the park:

- The towering, brilliantly colored sandstone cliffs of Zion provide intimate and awe-inspiring scenic and emotional experiences found nowhere else.
- Zion National Park contains one of the last mostly free-flowing river systems contributing to a major canyon formation and riparian community of the Colorado Plateau.
- The numerous narrow and complex canyon systems, in close proximity with sheer cliffs and widely variable topography, create a variety of microhabitats supporting a diversity of sensitive life forms and species adaptations.
- Alcoves, hanging gardens, and grottos nourished by ground water, support unique plants and animal communities, including endemic species.
- The geologic formations, representing several epochs in the formation of the Colorado Plateau's "Grand Staircase," provides unique educational insights.
- Near pristine archeological evidence of the ancestral pueblo people (Virgin Anasazi) culture is present. Well-preserved sites provide valuable scientific information of local and regional levels.

Water Resources

Water is a key resource in Zion, shaping the landscape and affecting plants, animals, and visitor use. Nearby communities and landowners also rely on the water that flows into and out of the park. Zion's water resources are currently in a relatively natural condition, and consist of perennial, intermittent and ephemeral streams, natural lakes, springs, seeps, wetlands, and *tinajas* (i.e., sand-

stone depressions that collect water). Stream flows can be heavy during spring runoff and later summer flood events.

Water quality has not been documented for most water resources in Zion. While most waters are thought to reflect near-natural water quality conditions, some degradation from development and land use practices in the park, and higher in the watershed, may be occurring. Even under completely natural conditions, these waters require treatment before being used for drinking.

Water rights for the park are mutually recognized in the recent Zion National Park Water Rights Settlement Agreement (1997) by the U.S. Department of the Interior, State of Utah, and Water Conservancy Districts from Washington and Kane counties. This agreement will help ensure that flow patterns and discharges of streams, springs, and groundwater are maintained, while also providing for the use of water for park administrative purposes and protecting the rights of other water users.

Geology

The geology of Zion is one of the primary purposes for which Mukuntuweap National Monument was initially established in 1909. Sedimentation initially helped to create Zion National Park, with environmental conditions ranging from oceans to coastal flood plain to river flood plains and channels. Following this, lakes, swamps, and desert dunes made up the scene. Volcanoes deposited ash and sediments that were washed down from the highlands. Periods of alternating deposition and encroaching sea and marine beds continued through the remainder of the Jurassic and Cretaceous periods.

About 13 million years ago, the Colorado Plateau uplift resumed, accompanied by profound erosion. With increased gradients, rivers could carry greater loads, resulting in extreme downcutting and widening. This process is primarily responsible for the formation of Zion's spectacular canyons and riverbeds. Today, the canyons continue to erode through surface runoff and groundwater percolation.

These canyons and their rivers are a chief attraction for park visitors, who marvel at the vertical canyon walls that, in some places, rise upward 1,500 feet from the canyon floor. The canyons are especially popular in the hot summer months when people seek shelter from the high temperatures and glaring sunshine.

Wildlife

Five animals on the federal threatened and endangered list are found within the park: American peregrine falcon, bald eagle, Mexican spotted owl, southwestern willow flycatcher, and the desert tortoise.

Other wildlife species that may depend on canyon or riverine environments include desert bighorn sheep, mountain lions, mule deer, bats, a year-round breeding bird population (with approximately 75 percent of the Neotropical migrant bird species occurring in riparian habitats), 26 confirmed species of reptiles, and six confirmed species of amphibians.

Several invertebrate groups in Zion have been studied to varying degrees, and species lists have been developed. Twenty-six species of snails are now listed within the park, but the only species studied in depth is the Zion snail, an endemic found only in upper Zion Canyon. Information on aquatic invertebrates is helpful in assessing water quality.

Fish

Eight fish species are present in the park, including three nonnative species of trout. Despite this, the native fish communities are relatively intact and include suitable habitat for two species (Virgin spinedace and the flannelmouth sucker) whose abundance has declined rapidly in recent years due to habitat alteration throughout much of their ranges.

The Virgin spinedace, abundant in the Virgin River drainage as recently as 20 years ago, is now in danger of disappearing, and was proposed for listing as a threatened species in 1993. In lieu of listing, a conservation agreement was prepared in 1993 between numerous federal, state, and local

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agencies, including Zion National Park. This agreement identifies steps required and responsible parties, to assure adequate habitat and survival of the spinedace. Within the park, currently the spinedace are found most abundantly in the East Fork Virgin River and Shunes Creek, with smaller populations occurring in the North Fork Virgin River and North Creek.

Ecology/Vegetation

Zion National Park is situated near the western margin of the Colorado Plateau, where its waters drain into the Mohave Desert, via the Virgin River. The Great Basin is immediately adjacent to the northwest of the Kolob portion of the park. The park's lowest elevation is Coal Pits Wash at about 3,800 feet, and the highest elevation is the summit of Horse Ranch Mountain at 8,926 feet. This 5,000-foot range in elevation supports vegetative communities from the Colorado Plateau, Mohave desert, and the Great Basin.

Riparian and aquatic vegetation comprise an important segment of the park's vegetation. These riparian areas support the richest flora and avian fauna in the park. Zion's riparian areas have been studied to identify prevalent species and management of these species (Harper, Sanderson, and McArthur 1988). More than 25 known rare or endemic plants occur in the park.

Fremont cottonwood, velvet ash, and other water loving trees and shrubs grow along the rivers and streams and around seeps and springs. Wet sandstone walls found in many of the canyons support peculiar plant communities called hanging gardens. The gardens support maidenhair fern, Zion shooting star, Cardinal monkeyflower, yellow and red columbine, Zion daisy, and other water loving plants.

Cultural/Historical

Zion National Park has a variety of cultural resources from a wide range of time periods. Prehistoric occupations began several thousand years ago and continued up to the eighteenth century. These occupations included the people of the Archaic, Basket Maker and Ancestral Pueblo, and Southern Paiute cultures. Most of the

prehistoric remains in the park belong to the ancestral pueblo (also known as the Virgin Anasazi) culture.

In historic time, the Mormon Church's colonization efforts dominated the region. Settlements of this period are located on the margins of the park, with remnants scattered throughout the park. When Mukuntuweap (Zion) National Monument was established in 1909, many of the pioneer families were still farming small irrigated plots of land. Later, activities relating to the establishment, development, and expansion of the park dominated the area.

Historic trails, tunnels, roads, bridges, and buildings in the park are products of the "NPS-Rustic" style of landscape and engineering design that dominated National Park Service construction throughout the 1920s and 1930s. Excellent examples of this architectural style can be seen along the Zion-Mt. Carmel Highway, the Grotto picnic area, the NPS maintenance yard, and in the Oak Creek and Pine Creek residential areas.

The early 1950s mark the close of the historic period, as younger resources do not meet the 50-year cut-off established by the National Register of Historic Places. However, management actions continue to create cultural change, and significant resources will continue to be added to the National Register as appropriate.

Scenery

Due to its diverse landscape and topography, Zion National Park provides opportunities for a wide variety of scenic views. Looking down into some of the canyons from above provides excellent views of sharply incised canyons with panoramic vistas looming in the background. Views from within the canyons are on a much more intimate scale, with canyon walls sometimes as narrow as 2 feet, with vertical relief up to 1,500 feet. Lush hanging gardens and splendid displays of wildflowers often cling to canyon walls, creating a unique combination of colors and textures. Rock art and archaeological sites can sometimes be viewed from within or above the canyons.

In several areas of the park, there are varying combinations of sedimentary rock and igneous

rock from volcanic periods, creating interesting color, shape, and texture associations. Throughout much of the park, towering red sandstone canyon walls mark a sharp contrast to the flowing rivers that created them. Many named features such as the Great White Throne, Angel's Landing, and the Temple of Sinawava, attract special interest and provide excellent opportunities for photography.

Recreation

Recreation visitation to Zion National Park has increased steadily since designation, and now averages 2.5 million people per year. Many people visit the park as part of the circle tour of the southwest. Visitor surveys indicate that Zion canyon receives the heaviest use, followed by the east side of the park along the Zion-Mt. Carmel Highway, and Kolob Canyons to the north. The primary activities sought by visitors in these areas are sightseeing, picnicking, hiking, photography, swimming/wading, camping, and concessioner horseback riding tours.

Backcountry use has increased dramatically since the mid-1980s. Several areas in the park now have designated campsites, and an annual monitoring program tracks site conditions. Within the Narrows and the Left Fork of North Creek, restrictions on the number of through day-hikers have been implemented. During the warm months (May-September), visitors tend to congregate in the water-filled canyons, particularly the North Fork of the Virgin River, the Left and Right Forks of North Creek, Middle Fork Taylor Creek, and La Verkin Creek.

Canyoneering is the fastest-growing activity in the backcountry, and the impacts on the resources and the hiker experience have increased accordingly.

ELIGIBILITY

Five rivers were found eligible for inclusion in the national wild and scenic rivers system: the North Fork Virgin River above and below the Temple of

Sinawava, the East Fork Virgin River, North Creek, La Verkin Creek, and Taylor Creek. The segments of the North and East Forks, Taylor Creek, and La Verkin Creek on adjacent BLM lands were all found eligible, except for the upstream 1.7 mile portion of Shunes Creek (tributary to the East Fork), from the Kane County line to the dry waterfall. These rivers were found to be free-flowing, and exhibited at least one outstandingly remarkable resource value. Coal Pits Wash and Camp Creek are ineligible because they lack outstandingly remarkable resources.

Table F-1 illustrates the results of the rating process. Values of "3" indicate outstandingly remarkable resources. Following the table, the outstandingly remarkable resource values are listed for each eligible river, along with the criteria for which the resource values were judged to be regionally significant. Comments provided by subject matter experts are included to provide some insight into the thought process of members of the rating team.

Determinations of outstanding remarkable values pertain to each river as a whole. There may be reaches of main stem and/or tributaries that exhibit the value to a lesser extent.

North Fork of the Virgin River above the Temple of Sinawava

Geology. Value is one of the most significant in the region for geologic/hydrologic feature abundance, diversity of features, and educational/scientific value.

- This section of river has spectacular exposures of the Navajo sandstone. Though excellent Navajo exposures are common, there are few if any other locations where the entire thickness of the formation is exposed in an almost vertical cut with 100 percent exposures. The erosional features associated with the unusually rapid downcutting of the Virgin River are also spectacular. There are also excellent examples of joint-controlled erosion.

Table F-1: Resource Value Ratings

	Cultural/ Historic	Geology	Wildlife	Fish	Ecology/ Vegetation	Recreation	Scenery
N. Fork Virgin, above Temple	0	3	2	2	3	2	3
N. Fork Virgin, below Temple	2	3	3	3	2	2	2
East Fork Virgin River	3	2	3	3	3	3	3
Coal Pits Wash	1	2	2	2	2	2	1
North Creek	1	3	3	3	2	2	3
La Verkin Creek	1	3	2	1	2	2	2
Taylor Creek	1	3	2	1	2	2	2
Camp Creek	1	2	2	1	2	2	2

Rating Legend:
 3 = value is one of the most significant in the region
 2 = value is typical in the region
 1 = value is less significant than most in the region
 0 = value is non-existent

[The geology value in this segment is the] "best in the world."

Ecology/Vegetation. Value is one of the most significant in the region for species diversity, riparian habitat quality, ecological function, rare communities, and educational/scientific value.

- One of the most significant examples of an inverted valley in existence. It harbors a phalanx of plants more typical of higher elevations [along with] an absence of livestock and associated impacts.
- [It contains] "rare hanging gardens and other unique vegetation."
- "Natural processes are largely unimpeded."

Scenic. Value is one of the most significant in the region for diversity of view and special features.

- "Canyon walls are up to 1,500 feet high, with a width of less than 25" in some areas. Rich red sandstone walls and dark desert varnish contribute to color and texture variety. Big Springs is one of the most spectacular hanging gardens anywhere, and provides a very interesting visual combination and contrast of lush greenery and abundant wildflowers in a narrow sandstone canyon. This is one of the most popular hikes in the park, as well as the region, for its outstanding scenic qualities."
- "Great contrast in soil, rock, and vegetation from the top to the Temple — from ponderosa and piñon to cottonwoods and willows, and

from high plateaus with wide vistas to a deep, narrow canyon. The Narrows itself is memorable and rare for its visual qualities—in particular, the play of light and shadow on the walls, a feature enhanced by the echoing sounds of cascading water in the narrow gorge. Here, probably more than in any other section, water dominates the physical characteristics and shapes the experience a hiker has."

North Fork of the Virgin River Below the Temple

NOTE: The North Fork's main stem channel exhibits the greatest modification of any reach in the park. Structures include a mile of gabion basket armoring on the east riverbank, as well as smaller areas of riprap, two grade control structures, and a concrete retaining wall at the site of a recent landslide. However, in the context of the entire 10-mile main stem reach, these modifications are minor. The river still flows in a largely natural condition, and therefore meets the definition of "free-flowing" as a requirement for eligibility.

Geology. Value is one of the most significant in the region for geologic/hydrologic feature abundance, diversity of features, and educational/scientific value.

- The geologic value lies in the number and variety of geologic features that are very well

exposed in a relatively small geographic area. These include: near 100 percent exposures of the Moenave, Kayenta, Navajo, Temple Cap, and part of the Carmel Formations; three dimensional views of some of these units due to the side canyons which allow better study of depositional and facies relationships; very visual examples of the variation in the erosional characteristics of units ranging from massive sandstone to clayey shales; excellent examples of landslides and rockfalls caused by undercutting incompetent units combined with overstepping by a rapidly downcutting river — the landslide and associated lake deposits just above the junction are probably the best exposed and most easily visualized example of this type of feature anywhere in the area. They are a favorite of geologists and geology students.

- [The geologic value of this segment is the] "best in the world."

Wildlife. *Value is one of the most significant in the region for species diversity, species abundance, natural reproduction, and wildlife viewing.*

- [There is an] "unbroken stand of mature cottonwood (and) crucial nesting habitat for peregrine falcons and Mexican spotted owls."
- "Wildlife diversity and abundance are high through this segment."

Fish. *Value is one of the most significant in the region for habitat quality, species diversity, natural reproduction, and species abundance.*

- "The fish community is in excellent condition. The segment harbors more abundant spinedace populations than are found elsewhere."
- "Has abundance and good distribution of pools, runs, and riffles. Still a fair amount of shading by vegetation and bank overhangs."
- Species diversity and abundance is high—all four native species (spinedace, speckled dace, desert sucker, and flannelmouth sucker) are there in abundance."
- "Annual fish shocking numbers are good, and research shows good numbers in the appropriate habitat types."

- "Natural reproduction is high, as all four species are reproducing in great numbers."
- "Numerous small size fish are found during shocking, and it is difficult to avoid seining of juveniles."

East Fork of the Virgin River

Cultural/Historical. *Value is one of the most significant in the region for cultural/historical significance, site integrity, data potential, educational/interpretative values, and is formally designated a National Register Archeological District.*

- The river has a "good concentration of substantial ancestral pueblo sites under NPS protection" and "numerous sites with intact subsurface deposits, outstanding educational and interpretive opportunities, and an outstanding volume of data."

Wildlife. *Value is one of the most significant in the region for habitat quality, species diversity, species abundance, natural reproduction, and wildlife viewing.*

- This river includes "important habitat for a variety of wildlife, including peregrine falcons and willow flycatchers. Species diversity and abundance are high throughout this segment."
- "Wildlife viewing potential is best in the region—opportunities to see at least 15 species of birds, four to five species of lizards, mountain lions, peregrine falcons, golden eagles, and bighorn sheep."

Fish. *Value is one of the most significant in the region for habitat quality, species diversity, natural reproduction, and species abundance.*

- "The fish community is in excellent condition. [Below the falls], the segment harbors more abundant spinedace populations than are found elsewhere, above the falls only speckled dace occur."
- "One of the only truly free-flowing stretches of the Virgin in the park, containing good proportions of runs, riffles, and pools still exhibiting natural dynamics."

- "Good amount of shading due to vegetation. Vegetation is still reproducing naturally, with lots of diversity of habitat types."
- "All four native species are present in tremendous abundance."
- "Annual fall monitoring results show this river to have the highest abundance in the region, as well as having some of the highest numbers of juvenile fish (natural reproduction)."

Ecology/Vegetation. *Value is one of the most significant in the region for species diversity, riparian habitat quality, ecological function, and educational/scientific value.*

- Within the park, this river has an "absence of livestock and associated impacts" and "rare hanging gardens, and other unique vegetation." "This river segment contains at least two rare plant populations. It is the best example of native riparian vegetation and processes in the park."

Recreational. *Value is one of the most significant in the region for recreational diversity, experience quality, and social setting.*

- This river is "historic, [with] river snakes (meanders), habitats, hanging gardens, and boulder falls."
- "The length of season for recreational opportunities in this canyon is higher than most in the region due to its low elevation. Additionally, this canyon offers a diversity of recreational opportunities, from moderate canyoneering to easy hiking in flat terrain."
- "This river provides an opportunity for a very unique experience, in that if/when opened to recreational use, it could be strictly limited to provide the highest degree of resource protection and visitor solitude."

Scenic. *Value is one of the most significant in the region for diversity of view and special features.*

- This canyon is truly remarkable especially for its upper sections. It has high relief, surface variations, rich color combinations, contrasts in soils, rock, vegetation, great cascading water and gorges, and narrow slots. This section is both memorable and rare in the region."

North Creek

Geology. *Value is one of the most significant in the region for geologic/hydrologic feature abundance, diversity of features, and educational/scientific value.*

- "Extensive excellent exposures of the geologic formations, primarily the Moenave, Kayenta, and Navajo Sandstone, in this area. The most unique feature in this area is the unusually thick stack of basalt flows (about 500 feet thick) in the area near Grapevine spring near the confluence of Left Fork and Right Fork. [The subject matter expert] knows of no other area where basalt flows have stacked up in this manner, for reasons that are not understood. Right Fork also has perhaps the second best example of a landslide, or basalt flow, dammed lake. The lake deposits have yielded some valuable vertebrate fossils. The thin basalt-capped ridge followed by the road near the west park boundary is also one of the best examples of an inverted valley in the area."

Wildlife. *Value is one of the most significant in the region for habitat quality, species diversity, species abundance, natural reproduction, and wildlife viewing.*

- [The river corridor includes] "a good variety of wildlife habitats and high species diversity."

Fish. *Value is one of the most significant in the region for habitat quality, species diversity, natural reproduction, and species abundance.*

- "The fish community is in excellent condition. The segment harbors more abundant spinedace populations than are found elsewhere."

Scenic. *Value is one of the most significant in the region for diversity of view and special features.*

- "The Left Fork is particularly diverse in scenic views, beginning at the initial descent across spectacular crossbedding (variations in color and texture), down Russell Gulch into the 'Left Fork of North Creek.' Clear, deep potholes, the characteristic 'subway' curvature of the canyon walls and the slot 'subway tracks' are very unique in the region."
- "Hanging gardens in the Right Fork are richly diverse and complex. The slot canyons,

coupled with the wide canyon vistas in the first and last sections of the canyon, make this area extremely diverse."

- "The upper section is particularly worthy of above average regional significance. High relief and surface variations meld well with the contrast in soils, rock, vegetation, and cascading water."

La Verkin Creek

Geology. *Value is one of the most significant in the region for geologic/hydrologic feature abundance, diversity of features, and educational/scientific value.*

Taylor Creek

Geology. *Value is one of the most significant in the region for geologic/hydrologic feature abundance and educational/scientific value.*

CLASSIFICATION

Proposed classifications for the six rivers are listed in table F-2. Tributaries are listed beneath main stems.

SUITABILITY

All five eligible rivers, including the eligible portions of the six BLM segments, were found suitable for inclusion in the national wild and scenic rivers system.

Characteristics That Do or Do Not Make the Area a Worthy Addition

The rivers of Zion National Park exhibit numerous narrow and complex canyon systems in close proximity with sheer cliffs and widely variable

topography, creating a variety of microhabitats supporting a diversity of life forms. Cultural resources from a wide range of time periods are present, and the river corridors provide a valuable recreational resource.

Each of the five eligible rivers has at least one exceptional natural, cultural, or recreational resource value, and most of the rivers have several of these values. As of yet, this region of the country, with its dramatic desert and canyon rivers, is very poorly represented in the national system. Hence, these rivers would make a valuable addition to the national wild and scenic rivers system.

Landownership

Ninety-seven percent of the river corridors found suitable are federally owned, including all of the East Fork Virgin River and both segments of the North Fork of the Virgin River (table F-3). Seven percent of La Verkin Creek, Four percent of North Creek, and one percent of Taylor Creek are private inholdings, totaling about four river miles. There are no private inholdings along the BLM segments.

Current Uses

The primary uses of Zion's river canyons are recreational. In the backcountry, (where the majority of the study river mileage is located), hiking, camping, and canyoneering predominate. For the most part, these river canyons cannot be seen unless one hikes into them. Along the road-accessible reach of the North Fork below the Temple, other recreational uses occur such as automobile sightseeing, picnicking, wading/swimming, and horseback riding. Also in the corridor along this reach of the North Fork are Zion Lodge (a concession offering lodging, food services and guided tours) and several NPS facilities, including the park visitor center, employee housing, water storage and maintenance facilities, as well as park campgrounds.

Table F-2: Proposed Classification

North Fork Virgin, above Temple	Wild	North Creek	Wild
Kolob Creek (incl. BLM segment)	Wild	Wildcat Canyon	Wild
Goose Creek (incl. BLM segment)	Wild	Right Fork	Wild
Imlay Creek	Wild	Left Fork	Wild
Orderville Canyon	Wild	Grapevine Wash	Scenic
Deep Creek	Wild	Wolf Springs Wash	Scenic
Mystery Canyon	Wild	Pine Spring Wash	Scenic
North Fork Virgin, below Temple	Recreational	Little Creek	Wild
Birch Creek Canyon	Wild	Russell Gulch	Wild
Pine Creek (excluding the segment below the lowest switchback west of the tunnel on Zion-Mt. Carmel Highway)	Wild	La Verkin Creek	Wild
Pine Creek (below the switchback to confluence with the North Fork Virgin)	Recreational		
Oak Creek	Recreational	Willis Creek (incl. BLM segment)	Wild
Heaps Canyon	Wild	Beartrap Canyon (incl. BLM seg.)	Wild
Behunin Canyon	Wild	Current Creek	Wild
Echo Canyon	Wild	Cane Creek	Wild
Clear Creek	Recreational	Timber Creek	Wild
East Fork Virgin River	Wild	Hop Valley Creek	Wild
Shunes Creek (incl. BLM segment) excluding the segment from the water diversion to the western park boundary	Wild	Taylor Creek	Wild
Shunes Creek from the western park boundary to the water diversion	Recreational	North Fork	Wild
		Middle Fork from the park's eastern boundary for 1 mile along the Kolob Canyons Road	Scenic
		Remainder of the Middle Fork (including BLM segment)	Wild
		South Fork	Wild

Private inholdings within the park's river corridors receive some grazing use. There is a private water right located on the lower end of Shunes Creek, stretching from the park boundary southeast for approximately three-quarters of a mile.

Current authorized uses along eligible BLM segments corridors include summer sheep grazing on the Taylor Creek segment (Cedar Mountain Allotment) and authorized nonuse for cattle on the Shunes Creek segment (Grapevine Allotment). Dispersed outdoor recreation including hiking, hunting, and fishing occurs on all segments. The geology, isolation, and poor accessibility of these small land tracts limits their multiple-use capacity.

Uses and Resources Enhanced, Curtailed, and Foreclosed

Wild and scenic designation would have little if any effect on uses within Zion National Park. The park is already administered for protection of the outstandingly remarkable resources, and construction of new dams is extremely unlikely. No uses would be foreclosed or curtailed because of the designation.

The same is true for the BLM segments. Impacts from suitability determinations would not change current uses, nor would it be expected to curtail or foreclose future uses, as none have been proposed in these areas. Protective measures that would limit or foreclose future development are already in place for four segments that fall within wilderness study areas.

Table F-3: River Mileage and Landownership of Suitable Rivers

	Flow	Total	River Miles NPS	BLM	Private	% Federal Ownership	Proposed Boundary
North Fork Virgin, above Temple	P	10.0	10.0	-	-	100	Rim-to-rim
Kolob Creek	P	3.3	2.9	0.4	-	100	Rim-to-rim
Goose Creek	I,P	4.6	4.2	0.4	-	100	Rim-to-rim
Imlay Creek	P	2.7	2.7	-	-	100	Rim-to-rim
Orderville Canyon	P	3.5	3.5	-	-	100	Rim-to-rim
Deep Creek	P	0.8	0.8	-	-	100	Rim-to-rim
Mystery Canyon	I	1.4	1.4	-	-	100	Rim-to-rim
Subtotal		26.3	25.5	0.8	0	100%	
North Fork Virgin, below Temple	P	8.0	8.0	-	-	100	1/2 mile
Birch Creek Canyon	P	2.3	2.3	-	-	100	1/2 mile
Pine Creek	I,P	4.6	4.6	-	-	100	Rim-to-rim
Oak Creek	I	2.8	2.8	-	-	100	1/2 mile
Heaps Canyon	E	2.8	2.8	-	-	100	Rim-to-rim
Behunin Canyon	E	1.9	1.9	-	-	100	Rim-to-rim
Echo Canyon	I	2.5	2.5	-	-	100	Rim-to-rim
Clear Creek	E	6.4	6.4	-	-	100	Rim-to-rim
Subtotal		31.3	31.3	0	0	100%	
East Fork Virgin River	P	8.0	8.0	-	-	100	1/2 mile
Shunes Creek	P,I	3.0	2.0	1.0	-	100	1/2 mile
Subtotal		11.0	10.0	1.0	0	100%	
North Creek	P	17.5	17.5	-	-	100	Rim-to-rim
Wildcat Canyon	I	2.8	2.8	-	-	100	Rim-to-rim
Right Fork	P	9.1	9.1	-	-	100	Rim-to-rim
Left Fork	P	7.5	7.5	-	-	100	Rim-to-rim
Grapevine Wash	E,P	3.0	2.6	-	0.4	86	1/2 mile
Wolf Springs Wash	I	1.9	1.4	-	0.5	73	1/2 mile
Pine Spring Wash	I,P	6.0	4.6	-	1.4	77	1/2 mile
Little Creek	P	7.1	7.1	-	-	100	1/2 mile
Russell Gulch	I	2.0	2.0	-	-	100	rim-to-rim
Subtotal		56.9	54.6	0	2.3	96%	
La Verkin Creek	P	8.7	8.7	-	-	100	1/2 mile
Willis Creek	I	1.9	1.6	0.3	-	100	rim-to-rim
Beartrap Canyon	P	2.3	2.2	0.1	-	100	rim-to-rim
Timber Creek	I	3.1	3.1	-	-	100	1/2 mile
Current Creek	P	1.6	1.4	-	0.2	89	rim-to-rim
Cane Creek	P	1.1	0.6	-	0.5	55	rim-to-rim
Hop Valley Creek	P,I	4.3	3.3	-	1.0	77	1/2 mile
Subtotal		23.0	20.9	0.4	1.7	91%	
Taylor Creek	P	4.6	4.5	-	0.1	98	rim-to-rim
North Fork	I	2.0	2.0	-	-	100	rim-to-rim
Middle Fork	P	2.0	2.0	0.1	-	100	rim-to-rim
South Fork	I	1.5	1.5	-	-	100	rim-to-rim
Totals		158.7	152.3	2.3	4.1	96%	

Notes:

Bold face indicates the main stem. Tributaries are listed beneath.

*Flow refers to hydrologic status as either (P)perennial, (I)intermittent, or (E)ephemeral.

- Goose Creek is intermittent in upper 2/3 of segment, perennial in lower 1/3.
- Pine Creek is intermittent above the slot canyon, perennial from slot canyon down.
- Grapevine Wash is ephemeral above Grapevine Spring, perennial below the spring.
- Pine Spring Wash is intermittent above spring, perennial below spring.

Proposed boundaries, if designated, are based upon canyon topography.

Existing Resource Protection

Zion National Park was established to

- Preserve the dynamic natural processes of canyon formation as an extraordinary example of canyon erosion
- reserve and protect the scenic beauty and unique geologic features, labyrinth of remarkable canyons, volcanic phenomena, fossiliferous deposits, brilliantly colored strata, and rare sedimentation
- Preserve the archeological features that pertain to the prehistoric races of America and the ancestral Indian Tribes
- Preserve the entire area intact for the purpose of scientific research
- Provide a variety of opportunities for visitors to learn about and enjoy the resources without degrading those resources

Zion's clear management mandate is to protect park resources, including the resources found in the river corridors. This mandate is based upon the park's enabling legislation (41 Stat. 356 and 70 Stat. 527) and legislative history, the NPS Organic Act (16 USC 1), and NPS Management Policies (NPS 2001).

Regarding private inholdings, the "Zion National Park Land Protection Plan" (NPS 1984) allows little change in the current, minimal development

and use of these lands. Listed as incompatible uses are: improving undeveloped land; major alterations to existing structures or new construction; intensification of current use; subdivision; creation of hazards to the public or to wildlife; and any activity that adversely impacts park resources. The land protection plan lays out the action that the park staff will take to deal with any incompatible use. These restrictions more than adequately guarantee the continued natural character, and existing classification, of the river corridors.

- *In addition, in many cases the extreme topography of the river canyons limits development and use, regardless of ownership.*

For the BLM segments, in addition to resource protection measures cited above, the *Dixie Resource Area Proposed Resource Management Plan / Final Environmental Impact Statement* (BLM 1998) directs management as portrayed in table F-4 below.

Federal Water Reserved Rights

A determination by the National Park Service of eligibility and suitability for the inclusion of rivers within Zion National Park to the wild and scenic rivers system does not create new water rights for the park. Federal reserved water rights for new components of the wild and scenic rivers system are established by Congress through amendment of the Wild and Scenic Rivers Act. When a river

component is added to the wild and scenic rivers system, water is reserved, from water that is not appropriated at the time of designation, in the amount necessary to protect the features which led to the river's inclusion in the system.

River flow in Zion National Park is protected by federal reserved water rights recognized under the Zion National Park Water Rights Settlement Agreement among the United States, Utah, the Washington County Water Conservancy District, and the Kane County Water Conservancy District. The agreement recognizes the United States' reserved rights to "all water underlying, originating within or flowing through Zion National Park . . . that was unappropriated as of the dates of reservation of the lands now within the boundaries of the park, which waters are to remain in a free-flowing condition," subject to all presently existing uses as well as to a limited amount of future development above the park. The rights comprise "those waters in the Virgin River Basin," and include all tributary sources of surface and groundwater.

Because this agreement provides comprehensive protection of Zion National Park rivers, the National Park Service will support designation under the Wild and Scenic Rivers Act only if the authorizing legislation recognizes the Agreement as constituting the reserved water rights for the park and is explicit in not reserving more water for the park than is provided for in the agreement. Only in this way can the National Park Service honor its commitments made in negotiating the agreement.

Manageability to Protect Outstanding Resource Values (ORVs)

Given the existing situation of nearly complete federal ownership of the river corridors and the administration's focus upon resource protection, ORV protection will continue in the park regardless of designation.

Resource protection on BLM lands will continue under the authority of section 202 of the Federal

Lands Policy Management Act until land use planning, through this amendment, is completed. Proposed amended decisions to the *Dixie Resource Area Resource Management Plan* are portrayed in table F-5 below.

Costs Required for Land/Easement Acquisition and Corridor Management

No costs are anticipated for corridor management due to wild and scenic river designation.

Extent to Which Administration Costs will be Shared by Local and State Governments

The river corridors within the park are almost entirely federally owned, and the BLM river corridors are entirely public lands. No additional costs are anticipated due to designation and management of park and BLM segments as wild and scenic rivers. Hence, state and local governments will not be expected to share in the costs of administration.

Feasibility and Timeliness of Designation

The Bureau of Land Management and the USDA Forest Service also currently are conducting wild and scenic river review processes in the Virgin River Basin. A joint review process was not feasible for administrative reasons. However, the three agencies have collaborated on aspects of the wild and scenic process (e.g., selection of a pool of subject matter experts, and the inclusion of contiguous upstream BLM segments in the NPS assessment process), as directed in the 1996 "Wild and Scenic River Review in the State of Utah — Process and Criteria for Interagency Use," and ensuing interagency agreements. Regardless of the outcome of these other planning processes, designation of the five rivers in Zion National Park and the upstream BLM segments would be both timely and feasible.

Table F-4: Existing Resource Protection on BLM Segments

	Taylor Creek	Willis Creek	Bear Trap Canyon	Kolob Narrows	Goose Creek	Shunes Creek
Off-Highway Vehicles	Closed	Existing roads & trails	Closed	Existing roads & trails	Existing roads & trails	Closed
Fluid Minerals	Category 3	Open	Category 3	Open	Category 2	Category 3
Locatable Minerals	Plan of Operation	Open	Plan of Operation	Open	Open	Plan of Operation
Mineral Materials	Closed	Open	Closed	Closed	Closed	Closed
Mountain Bikes	Closed	Open	Closed	Open	Open	Closed
Right-of-Way	Avoidance	Avoidance	Avoidance	Avoidance	Avoidance	Avoidance
Fuelwood	Closed	Closed	Closed	Closed	Closed	Closed
Visual Resources	Class II	Class II	Class II	Class II	Class II	Class I
Wilderness Study Area	Yes	No	Yes	No	Yes	Yes
Area of Critical Environmental Concern	No	No	No	No	No	Yes
Special Recreation Management Area	No	No	No	Yes	No	Yes

Table F-5: Proposed Management Changes for Suitable BLM River Segments

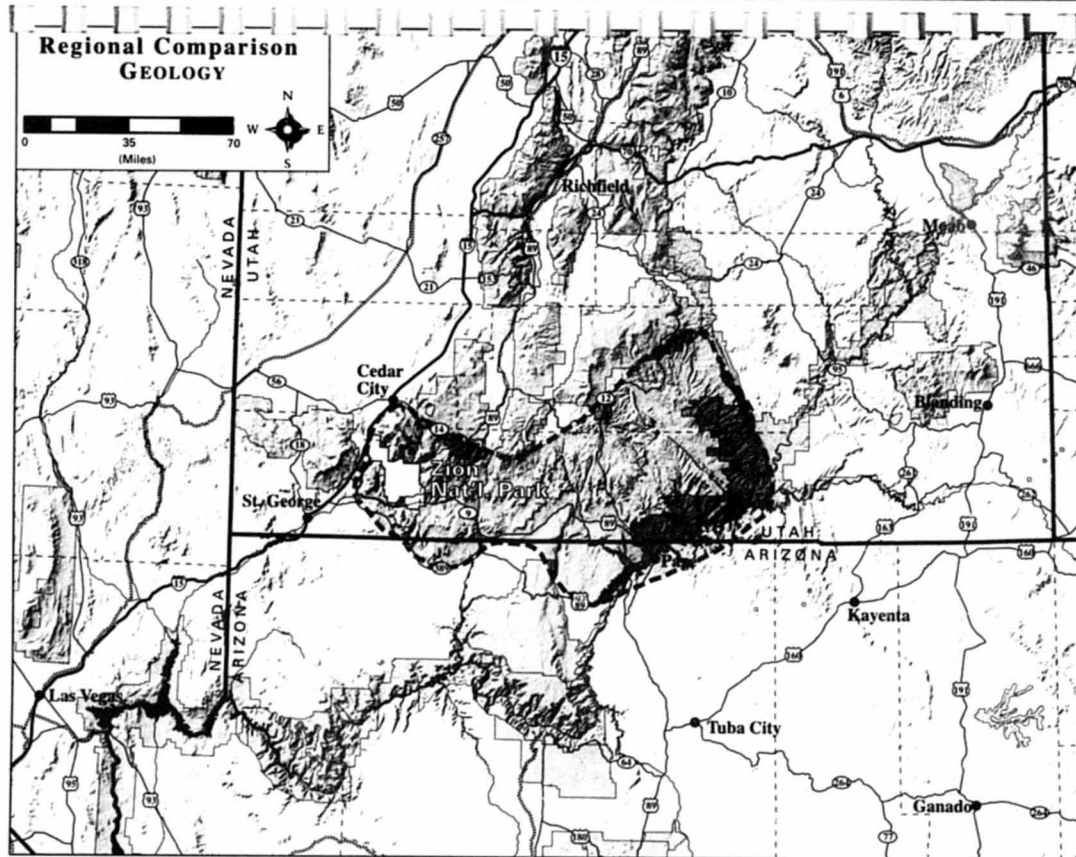
	Willis Creek	Kolob Narrows	Goose Creek
Off-highway Vehicles	Closed	Closed	Closed
Fluid Minerals	Category 3	Category 3	Category 3
Locatable Minerals	Plan of Operation	Plan of Operation	Plan of Operation
Mineral Materials	Closed	Same as existing	Same as existing
Mountain Bikes	Closed	Closed	Closed

APPENDIXES

PROPOSED BOUNDARIES

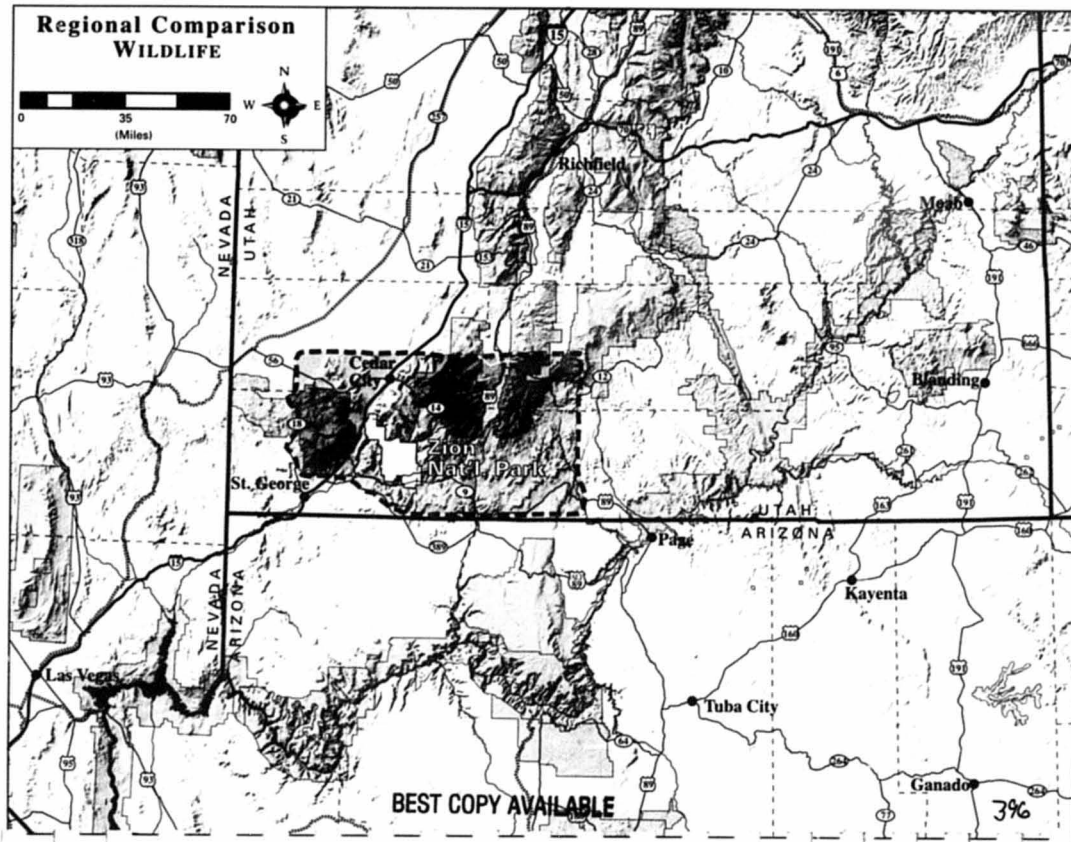
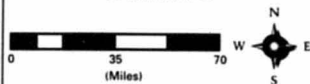
Once rivers are included in the national wild and scenic rivers system, a management boundary is determined. Given the deep, narrow canyon character of many of Zion's rivers, it is proposed that a topographic-based management boundary be

considered for these national wild and scenic river designated waterways. Table F-3 depicts corridor width proposals of either 1/2 mile or rim-to-rim.

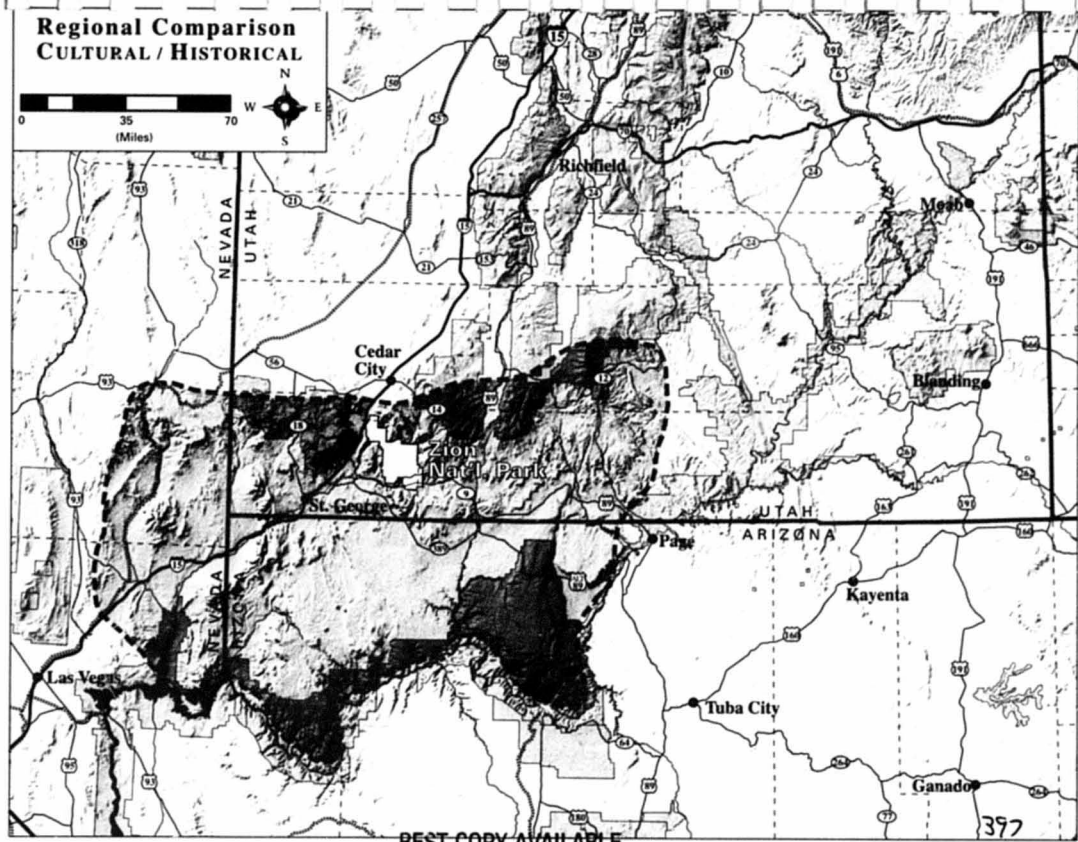


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Regional Comparison
WILDLIFE

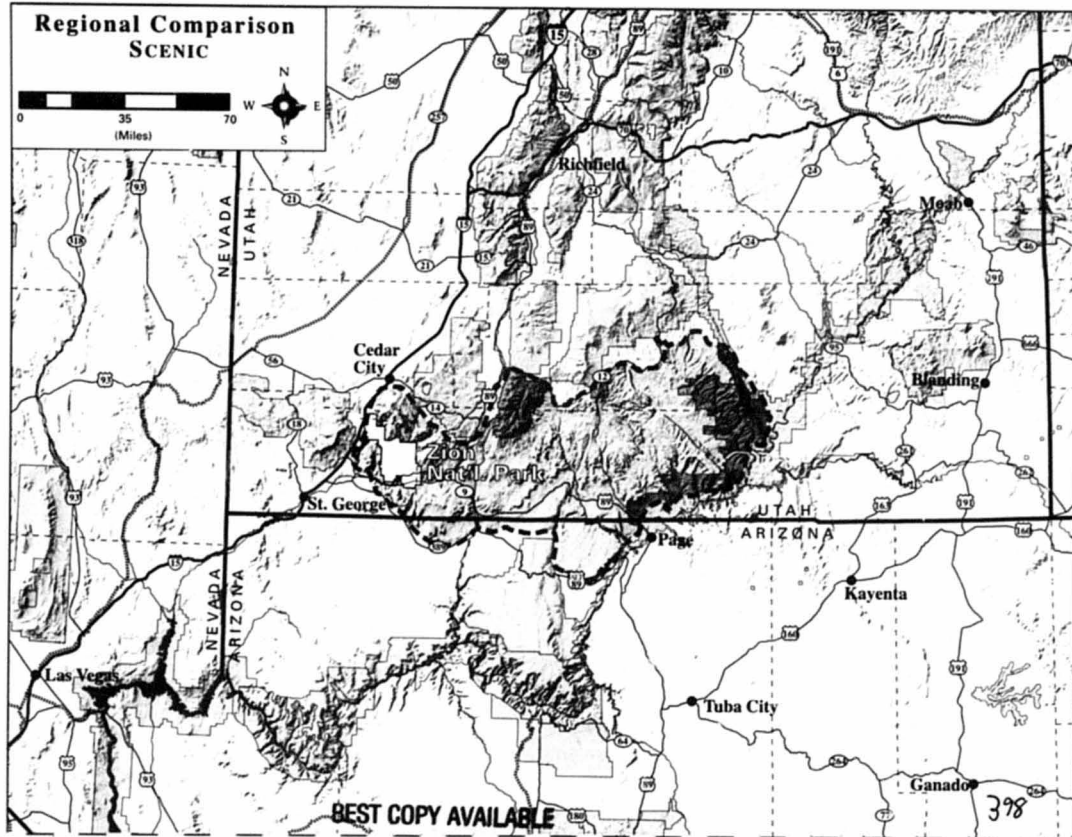
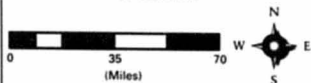


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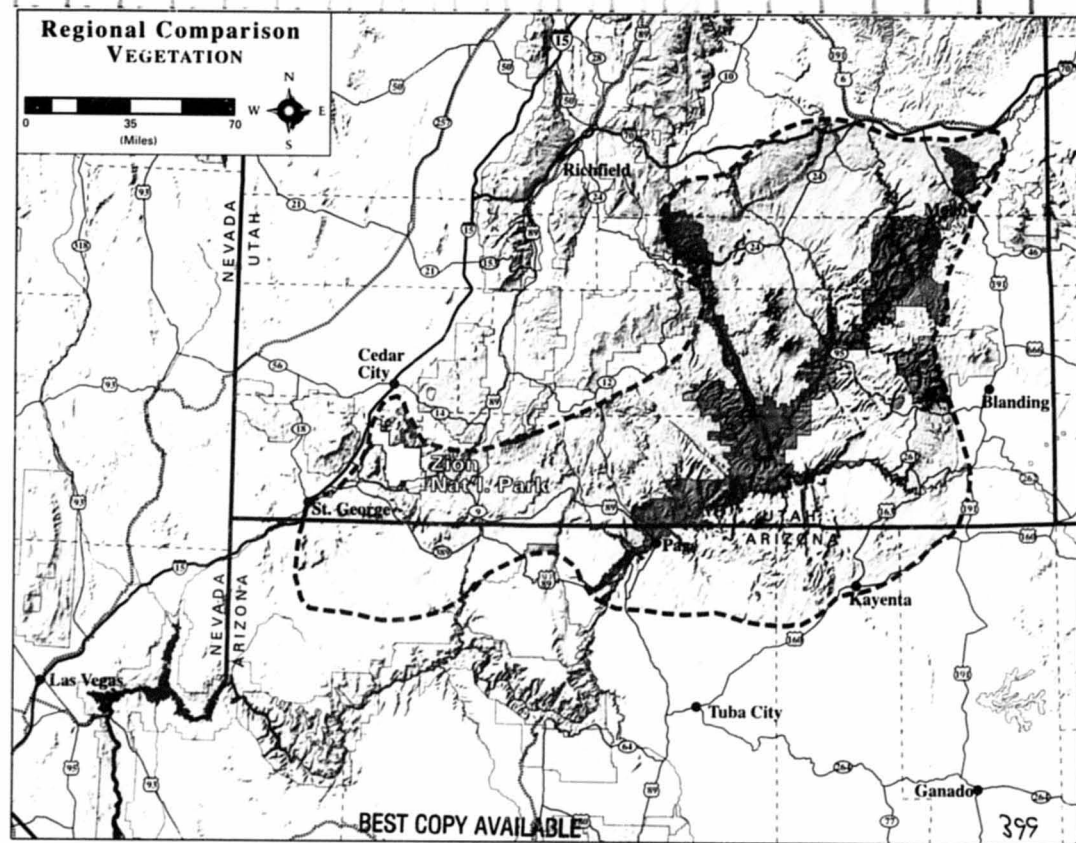


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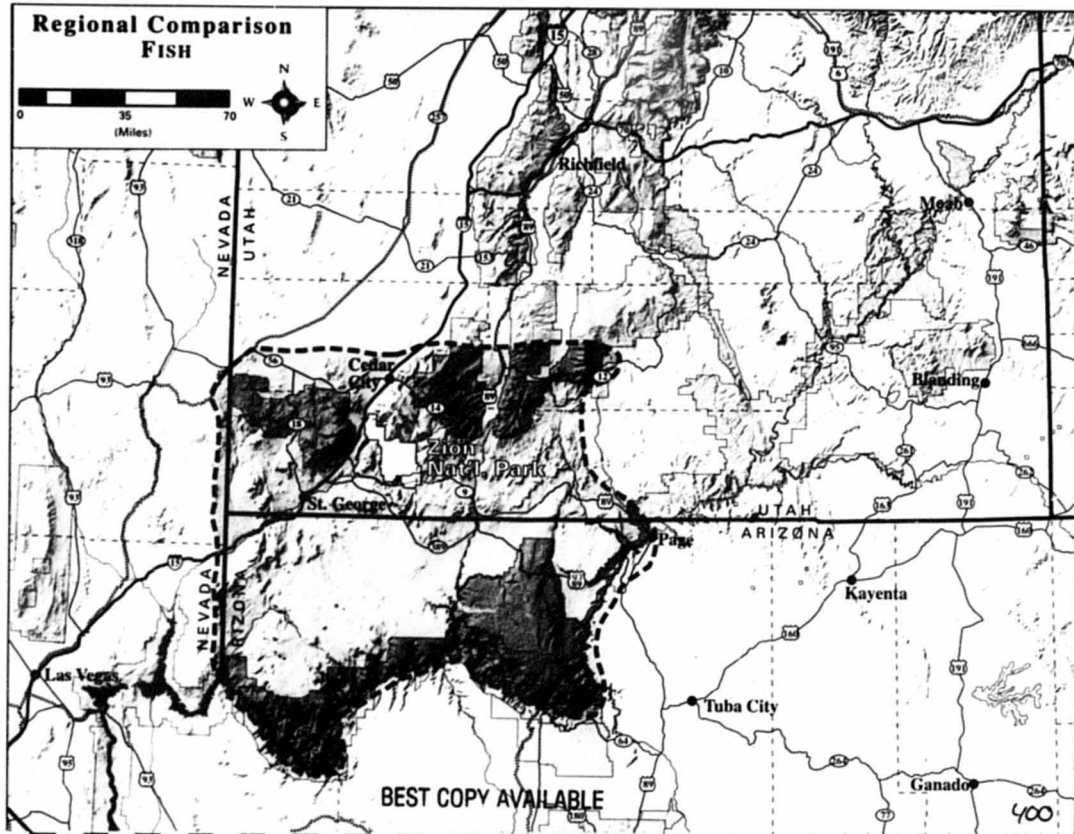
Regional Comparison
SCENIC



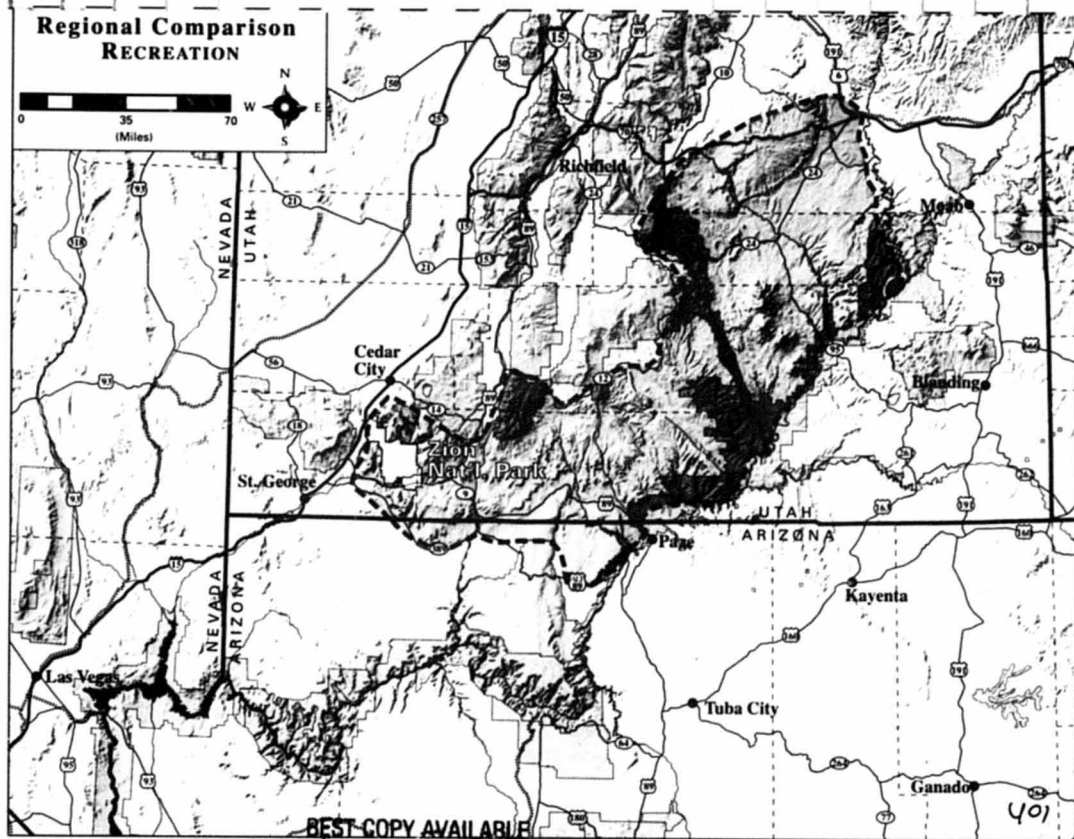
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Regional Comparison
FISH



Regional Comparison
RECREATION



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EXHIBIT 2: SUBJECT MATTER EXPERTS

Craig Addley, Professor of Environmental Engineering, Utah State University, Logan	Laurie Kurth, Botanist, Zion National Park
Jack Burns, Cultural Resources Specialist, Zion National Park	Fred Lohrengel, Geologist, Southern Utah University
J.L. Crawford, Historian	Bill Lund, Geologist, Utah Geological Society
Gardiner Dalley, Archeologist, BLM Cedar City Field Office	Ken McDonald, formerly a Nongame Biologist with the Utah Division of Wildlife Resources (now with the Montana Department of Fish, Wildlife & Parks)
James Deacon, Professor of Environmental Studies, University of Nevada, Las Vegas	Laird Naylor, Archeologist, Zion National Park
Robert Eves, Geologist, Southern Utah University	Dave Pettit, Photographer
Steve Hedges, Wildlife Biologist, BLM Cedar City Field Office	Dennis Turville, Photographer, Canyoneer
Logan Hebner, Professional River Guide	Stan Welsh, Curator and Professor, Brigham Young University
Mary Hunnicutt, Biologist, Zion National Park	Grant Willis, Geologist, Utah Geological Society

EXHIBIT 3: RESOURCE VALUE RATING CRITERIA

Resource values were rated according to the following criteria. For all of the rating sheets, the following ratings were used

- 3 = value is one of the most significant in the region
- 2 = value is typical in the region
- 1 = value is less significant than most in the region
- 0 = value is nonexistent

Cultural/Historical Criteria:

Significance: Consider sites or features associated with use by prehistoric, historic, contemporary cultural groups, or a historically significant event or person. Consider sites that have significant human interest value. Rare, unique, or unusual sites or features are of higher value.

Site Integrity: Consider presence of exceptional examples of architecture, features, or remains from a significant period in history. Unmodified sites retaining original character and features in excellent condition and providing exceptional examples are of higher value.

Ethnographic Significance: Consider sites, features, or resources associated with historic or modern day use, that exhibit a continuation of traditional use (e.g., fishing, natural resource collection), or are related to land use (i.e., irrigation).

Data Potential: Consider major sites or features with multiple scientific data sources. River corridors representing more than one culture or culture periods are of higher value. Sites and features used for rare and sacred purposes are of higher value.

Education/Interpretation: Consider sites that have regional or national importance for interpreting significant prehistoric or historic events, sites, or people; sites that clearly and graphically reveal an interesting or unique history of the region; and have the ability to attract visitors from outside the region.

Listing/Eligibility: Consider corridors that contain sites or features that are currently listed in, or are eligible for, the National Register of Historic Places, or designated as a national historic landmark.

Geologic Criteria:

Geologic and Hydrologic Feature Abundance: Landforms with unusual, unique, or outstanding geologic/hydrologic features (e.g., deep canyons, unique rock formations/outcrops, waterfalls, wetlands, hanging gardens, gorges, arches, lake deposits, stream terraces, hoodoos, lava flows). River corridors with an abundance of unusual, unique, and distinctive geologic features to the region are of higher value.

Diversity of Features: Consider the number and variety of special geologic/hydrologic features, and the value of these features to the region. Consider the unique or rare combination of geologic/hydrologic features (e.g., erosional, volcanic). The greatest diversity of features are of higher value.

Educational/Scientific Value: Geologic/hydrologic features clearly and graphically reveal an interesting/unique educational or scientific story of earth's history. River corridors that represent "textbook" examples of a common feature or are the best example of a feature in the region are of higher value.

Wildlife Criteria:

Habitat Quality: Consider the presence, extent, and carrying capacity of a variety of wildlife habitats, including winter range, summer range, transition zones, travel corridors, and calving areas. Consider unique habitats or critical links in habitat for rare species (federally listed, state-listed, sensitive species, or candidate species). Areas with the greatest and best habitat, contiguous habitat, and habitat for rare species are of higher value.

Species Diversity: Consider the number and variety of species present and the value of these

species. Rivers with the greatest diversity of species, including rare species, are of higher value.

Species Abundance: Rivers with the greatest number of wildlife within the river corridor are of higher value.

Natural Reproduction: Rivers with extensive natural reproduction are of higher value than those supported mostly by transplants.

Quality of Experience (wildlife viewing): Consider the sights, sounds, and smells attendant with wildlife experience. Highly scenic, pristine rivers are of higher value as compared to rivers that are visually monotonous, heavily developed, malodorous, or noisy.

Fish Criteria:

Habitat Quality: Consider the presence, extent, and carrying capacity of spawning areas, rearing areas and adult habitat; and habitat for wild stocks and rare species (federally listed, state-listed, sensitive species, or candidate species). Areas with the greatest amount and best habitat, especially for wild stock and rare species, are of higher value.

Species Diversity: Consider the number and variety of species present and the value of these species. Rivers with the greatest diversity of species, including wild stocks and rare species, are of higher value.

Species Abundance: Rivers with more fish are of higher value.

Natural Reproduction: Rivers with extensive self-sustaining natural reproduction are of higher value than those supported mostly by stocking.

Ecology/Vegetation Criteria:

Species Diversity: Consider the presence, extent, and diversity of plant communities; ecological values that are critical to protection of biological diversity; and critical habitat for species conservation (e.g., refugia). River corridors with the greatest diversity and importance to species conservation are of higher value.

Riparian Habitat Quality: Consider riparian communities that are intact with structural diversity and species composition appropriate for the geographic area. Vegetative composition and distribution is primarily of native species.

Ecological Function: Consider rivers with rare or unique corridors that are critical and essential for species migration and genetic interaction. Natural flooding, channelization, and river movement are not impeded or altered (i.e., there are no human-made structures along the banks or in the river).

Rare Communities: Rivers with rare, sensitive, threatened and endangered species, communities, and habitats are of higher value.

Educational/Scientific: Consider ecological values and features that clearly and graphically reveal an interesting/unique educational or scientific story of the ecological form and function. River corridors that represent "textbook" examples of plant and animal associations or ecological values/features in the region are of higher value.

Recreation Criteria:

Length of Season: Consider the amount of time the river corridor is used or available for recreation purposes, such as outdoor education, photography, backpacking, hiking, canyoneering, climbing, camping, horseback riding, kayaking, etc. Rivers with the longest season of use are of higher value.

Recreation Diversity: Consider the number and variety of recreation uses occurring within the corridor. Rivers that provide for the largest number and diversity of recreation uses are of higher value.

Experience Quality: Consider the comparative number or percent of similar experiences available in the region. Rivers that provide the most unique opportunities are of higher value.

Social Setting: Consider the type of use, level of use, and potential conflicts between user groups in and along the river corridor. Rivers with uncrowded conditions and no user conflicts are of higher value.

Scenery Criteria:

Diversity of View: Consider the presence of high relief; severe surface variation; rich color combinations (e.g., high variety, vivid colors); pleasing contrast in soil, rock, vegetation, and water; views that greatly enhance visual quality; still or cascading water that is dominant in the landscape. River corridors with the greatest diversity and variety of views, both foreground and background, are of higher value.

Special Features: Consider outstanding natural, historical, or cultural features; landforms with unusual or outstanding topographic features (e.g., gorges, narrow slot canyons, high relief, rock outcrops, falls, rapids, springs, color, vegetation). River corridors with high relief and focal points that are visually striking, particularly memorable, or rare in the region are of higher value.

APPENDIX G: LETTER FROM THE U.S. FISH AND WILDLIFE
SERVICE

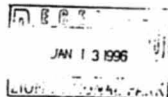


In Reply Refer To:
(CO/KS/NE/UT)

United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
LINCOLN PLAZA
145 EAST 1300 SOUTH, SUITE 404
SALT LAKE CITY, UTAH 84115

January 8, 1997



Memorandum

To: Superintendent, Zion National Park, Springdale, Utah
From: Assistant Field Supervisor, U.S. Fish and Wildlife Service, Utah
Ecological Services Field Office, Salt Lake City, Utah
Subject: Endangered and Threatened Species List for Zion National Park Visitor
Management Resource Protection Plan and Environmental Impact
Statement

The U.S. Fish and Wildlife Service (Service) has received your request for a list of
endangered and threatened species which may occur in the area of influence of the subject
management plan for Zion National Park. The following species may occur in the project
area:

Common Name	Scientific Name	Status
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Desert Tortoise	<i>Gopherus agassizii</i>	Threatened
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered
Southwestern Willow Flycatcher	<i>Empidonax traillii eximius</i>	Endangered
Utah Prairie Dog	<i>Cynomys parvidens</i>	Threatened

Though we do not believe there are currently any Utah Prairie Dogs within park boundaries,
the southern tip of the species' range is so close to Zion's northern border that they were
included because Zion may be within their dispersal range.

Only a Federal agency can enter into formal Endangered Species Act (ESA) section 7
consultation with the Service. A Federal agency may designate a non-Federal representative
to conduct informal consultation or prepare a biological assessment by giving written notice
to the Service of such a designation. The ultimate responsibility for compliance with section
7, however, remains with the Federal agency.

The proposed action should be reviewed and a determination made if the action may affect
any listed species or its critical habitat. A determination also should be made if the action is

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likely to jeopardize a proposed species or result in the destruction or adverse modification of
any proposed critical habitat. If the determination is "may affect" for listed species, formal
ESA section 7 consultation should be requested by the Federal agency to the Assistant Field
Supervisor at the address given above. In addition, if a determination is made that the
proposed action may jeopardize proposed species or result in the destruction or adverse
modification of proposed critical habitat, the Federal agency must confer with this office. At
that time, the Federal agency should provide this office with a copy of a biological
assessment or any other relevant information that was used in reaching its conclusion.

Your attention is also directed to section 7(d) of the ESA, which underscores the requirement
that the Federal agency or the applicant shall not make any irreversible or irretrievable
commitment of resources during the consultation period which would, in effect, deny the
formulation or implementation of reasonable and prudent alternatives regarding their actions
on any endangered or threatened species.

If further assistance is needed, please contact me or Marilet A. Zablan, Wildlife Biologist, of
this office at telephone (801) 524-5001.

Robert A. Williams

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APPENDIX H: STATEMENT OF FINDINGS FOR THE GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT, ZION NATIONAL PARK

INTRODUCTION

Description of the Site

The North Fork of the Virgin River is the main drainage through Zion Canyon. A number of tributary streams feed into the North Fork within the canyon, including Birch Creek. Zion Canyon is the primary visitor use area within the park. Because of the physiographic characteristics of the canyon, a narrow valley confined by tall canyon walls, much of the existing use and development is located along the bottom of the main canyon or side streams.

Description of the Preferred Alternative

This statement of findings addresses the National Park Service proposal to retain the Zion Lodge and associated development, the support facilities at Birch Creek, existing picnic areas, as well as the addition of new picnic sites in Zion Canyon. Maintenance of other existing facilities within the canyon and proposed transportation system developments were covered under the statement of findings for the Development Concept Plan for Zion Headquarters (NPS 1994a) and the subsequent Zion Canyon Transportation System Environmental Assessment (NPS 1997a). The transportation system plan modified the elements of the earlier development concept plan and the statement of findings.

Flooding Characteristics in the Area

The North Fork experiences wide fluctuations in flow with a seasonal snowmelt peak in the spring, followed by generally low summer and fall flows. Occasional heavy storms, which can occur at any time of the year but are most common in summer and early fall, produce the largest flows in the Virgin River system. These runoff events are usually of short duration and

can occur suddenly. Floods in desert regions such as Zion are often accompanied by large quantities of debris and sediment, increasing the impact of floods. One reservoir is two and one-half miles upstream of the park on a tributary of the Virgin River. The Kolob Reservoir releases into Kolob Creek, which runs southeast into the North Fork.

Through much of Zion Canyon, the 100- and 500-year floodplains closely follow the banks of the river. The probable maximum flood area flows out into much of the valley floor.

Estimates of flood stage indicate that the Zion Lodge and associated facilities (parking, restrooms, cabins, concessioner housing) would be protected by the existing road grade, which would contain both the 100- and 500-year floods. An exception to this is in the upstream reach adjacent to the main lodge building, where the 500-year flood would overtop the road and inundate a portion of the lawn area in front of the lodge. The flood depth would not reach the lodge foundation and overbank velocities would not likely exceed two feet per second. Even with failure of the road grade, neither of these design floods would reach the elevation of the lodge, since the foundation is estimated to be a minimum of three feet above the 100-year flood and one foot above the 500-year flood.

No floodplain mapping or flood stage estimates have been made for the support facilities (concessioner housing, water tank, and stable/corral) on the Birch Creek point. Based on the topography and river channel characteristics in this area, these facilities are likely elevated outside of the 100- and 500-year floodplains, but would be within the probable maximum floodplain.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Why the Proposal Would Retain Facilities in the Floodplain

The Zion lodge and Birch Creek facilities would be retained for their existing use and would remain within the probable maximum floodplain. The floodplain is closely bordered by canyon walls that slope upward at a sharp angle. Therefore there is little canyon bottom that is level enough for development that is outside of the floodplain and there are no other suitable non-floodplain sites on the narrow canyon bottom for relocation of these facilities. The overnight facilities in these two areas would be outside of the more frequently flooded sites as well as the 100- and 500-year floodplains. The park's warning and evacuation procedures would also remain in effect.

Under NPS procedures for implementing Executive Order 11888, the existing and proposed picnic areas may be placed within the 100-year floodplain, but these day use facilities must contain signs informing visitors of flood risk and suggested actions in the event of flooding. These facilities would be signed to warn visitors of flash flood hazards and evacuation areas.

Alternatives Considered in the Environmental Impact Statement

There were no alternatives considered in the *General Management Plan* that would remove the Zion Lodge, Birch Creek development, or picnic areas. One alternative did consider converting the lodge to an environmental education center, although overnight use would still continue in support of this new function.

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK AND ACTIONS TO MINIMIZE HARM TO FLOODPLAIN VALUES AND TO MINIMIZE RISK TO LIFE OR PROPERTY

The above facilities for visitors and employees, including overnight users, would be maintained in

their existing locations within flood hazard areas along the North Fork and tributaries because flood prone areas are unavoidable within the confines of the canyon walls. These facilities could be lost during an extreme flood event, but are outside of areas potentially subject to more frequent flooding. To protect lives the evacuation plan and warning system would remain in effect. The flash flood warning and evacuation plan consists of daily contact between Zion dispatch and the National Weather Service during the summer to receive weather forecasts and storm potential conditions. Observations of drainage conditions by park rangers are also collected. The standard operating procedure is to close the upper canyon road to visitor traffic during flash floods, while posting rangers as scouts along the river to warn visitors and employees of impending danger. The park would also emphasize public education and awareness of flood hazards. Picnic facilities would be signed to warn of flash flood hazards and evacuation areas. These measures would minimize potentially hazardous conditions to people.

The natural and beneficial values of floodplains (moderation of floodwaters, maintenance of water quality, and groundwater recharge) would primarily not be affected by retaining the existing facilities. Minimal effects on ground water recharge would result from retention of impervious structures or paved surfaces.

SUMMARY

The National Park Service has determined that there is no practicable alternative to maintaining Zion Canyon Lodge, Birch Creek support facilities, and picnic areas within the probable maximum floodplain. This determination was based on the decision to maintain Zion Canyon as the primary visitor use area within the park, with provisions for overnight and day-use facilities. These facilities are not within areas subject to frequent flooding, and with the early warning system and evacuation plan in use, the risk to human safety would be minimized.

APPENDIXES

Recommended:

Water Resources Division Date

Recommended:

Regional Compliance Officer Date

Recommended:

Regional Director Date

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APPENDIX I: SUMMARY OF RESEARCH NATURAL AREAS

RESEARCH NATURAL AREA	GENERAL DESCRIPTION	ECOLOGICAL UNITS PRESENT IN THE RNA ¹	OTHER RESOURCE ATTRIBUTES
Kolob Mesas <i>Considered in:</i> Preferred Alternative Alternative A Alternative B	The relatively flat tops of Timber Top Mountain and Nagant Mesa overlooking the Kolob Canyons. Also includes canyon draining west from Timber Top Mountain. Access is by helicopter and technical climbing only. 222.6 acres - Alternative A 623.0 acres - Alternative B and Preferred Alternative	Hanging canyons Relict mesas Relict forests Springs and seeps Rock crevice and slickrock communities	Peregrine falcon nesting and foraging Natural 1 st order watershed
Shunes Creek <i>Considered in:</i> Preferred Alternative Alternative A Alternative B	Shunes Creek Canyon below the Navajo Sandstone cliffs along the southern boundary of the park, excluding the administrative zone around a water right diversion. Shunes Creek is a small perennial stream tributary to the East Fork of the Virgin River. Acreage is combined with Parunuweap	Riparian fluvial & aquatic Springs and seeps Riverine adaptation of ancestral Puebloan people	Bighorn sheep lambing area Good populations of virgin spinedace Natural function in riparian area Ancestral Puebloan people use
Hanging Gardens <i>Considered in:</i> Preferred Alternative Alternative A Alternative B	Five hanging gardens in Zion and Parunuweap Canyons. RNA would include the immediate vicinities of Grotto Spring, Weeping Rock, Sinawava Hanging Garden, and two unnamed springs in Parunuweap Canyon. 1.4 Acres - Alternative A and B 2.2 acres - Preferred Alternative	Hanging gardens Springs and seeps	Rare endemic plant and animal communities Rare hydrology Endemic invertebrates including Zion snail
Isolated Mesa Tops <i>Considered in:</i> Preferred Action Alternative A Alternative B	Isolated mesa tops that are surrounded by high cliffs of Navajo Sandstone. These include Burnt Mountain (s. of La Verkin Creek), Greatheart Mesa, Inclined Temple, four unnamed high mesas west of Horse Pasture Plateau, and two closely associated unnamed mesas north of Wyanpits Mountain. Access is by helicopter and technical climbing only. 877.4 acres - Preferred Alternative 870.2 acres - Alternative A 1,908.1 acres - Alternative B	Relict mesas Hanging canyons Relict forests	Genetic isolation of some plant and animal species is possible. Conditions for plants and animals are as near natural as physical isolation can provide First order ephemeral channels Relict ecosystems in the absence of large mammals
Goose Creek <i>Considered in:</i> Preferred Action Alternative B	The sandstone slot canyons of Goose Creek, which drain east from Lava Point and Horse Pasture Plateau. A five-mile long tributary of the North Fork of the Virgin River with deep narrow canyons and perennial stream flow in the lower reaches.	Slot canyons Riparian fluvial & aquatic Springs and seeps Hanging canyons Relict forests	Mexican spotted owl habitat. Second and third order ephemeral and perennial channels Surface almost entirely inside park

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APPENDICES

RESEARCH NATURAL AREA	GENERAL DESCRIPTION	ECOLOGICAL UNITS PRESENT IN THE RNA ¹	OTHER RESOURCE ATTRIBUTES
	Access to most of Goose Creek is through technical canyoneering. 994.3 acres - Preferred Alternative and Alternative B		
Crazy Quilt Mesa <i>Considered in: Preferred Alternative Alternative B</i>	The top of Crazy Quilt Mesa and adjacent slopes, east of Checkerboard Mesa near the East Entrance to the park. Access is by helicopter and technical climbing only. 153.0 acres - Preferred Alternative and Alternative B	Relict mesas Rock crevice and slickrock communities	Excellent examples of slickrock, and crack & crevice geology and hydrology Several rare plant species Potential Mexican spotted owl habitat
Slickrock <i>Considered in: Preferred Alternative Alternative B</i>	An area of extensive slickrock buttes, slopes and terraces, south of Clear Creek, east of Gifford Canyon and around the head of Crawford Wash. 556.6 acres - Preferred Alternative Combined with Parunuweap - Alternative B	Rock crevice and slickrock communities Eolian landscape	Excellent examples of slickrock, and crack & crevice geology and hydrology Several rare plant species
Southeast Pinyon-Juniper <i>Considered in: Preferred Alternative Alternative B</i>	An area of relatively deep sandy soils supporting relict pinyon - juniper forests in the southeastern most corner of the park. The vicinity includes dune deposits and slickrock. Access is via several miles of poor roads across BLM land. 1,180.5 acres - Preferred Alternative Combined with Parunuweap - Alternative B	Relict forest Eolian landscape	Unusually large old-growth pinyon - juniper communities Unique association of birds Numerous evidence of ancestral Puebloan people use
Slopes of Parunuweap & Shunesburg Mtn. <i>Considered in: Alternative A</i>	Includes Parunuweap and Shunes Creek Canyons in the southeastern part of the park. This RNA would include slopes below the Navajo Sandstone cliffs, the sandstone bluffs of Shunesburg Mountain (between the two canyons). It would exclude the riparian corridor along the East Fork of the Virgin River and the administrative zone around a water diversion on Shunes Creek. Parunuweap canyon contains the East Fork of the Virgin River, one of the last remaining natural rivers in the desert southwest. 4,863.9 acres - Alternative A	Riparian fluvial & aquatic Springs and seeps Slot canyons Hanging gardens Hanging canyons Riverine adaptation of ancestral Puebloan people Eolian landscape	Bighorn sheep lambing area Peregrine falcon breeding Mexican spotted owl breeding Rare plants Numerous evidence of ancestral Puebloan people use Historic use Natural hydrology and healthy riparian communities
Parunuweap <i>Considered in: Preferred Alternative Alternative B</i>	Preferred Alternative - Includes Parunuweap and most of Shunes Creek Canyons below the Navajo Sandstone, and Transview mountain above the Navajo sandstone. Alternative B - Expanded to include most of the southeastern portion of the park incorporating Parunuweap Canyon, Shunes	Rock crevice and slickrock communities Riparian fluvial & aquatic Springs and seeps Hanging gardens Hanging canyons	Numerous evidence of ancestral Puebloan people use Bighorn sheep lambing area Peregrine falcon breeding Mexican spotted owl breeding

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RESEARCH NATURAL AREA	GENERAL DESCRIPTION	ECOLOGICAL UNITS PRESENT IN THE RNA ¹	OTHER RESOURCE ATTRIBUTES
	<p>Creek Canyon, Shunesburg Mountain, and Transview Mountain. Incorporates the "Slickrock," "Southeast Pinyon-Juniper," and "Shunes Creek" RNAs described above.</p> <p>Parunuweap canyon contains the East Fork of the Virgin River, one of the last remaining free-flowing large rivers in the desert southwest. The surrounding lands include extensive slickrock and old-growth Pinyon Juniper in the southeastern corner of the park.</p> <p>4,625 acres - Preferred Alternative 11,270.0 acres - Alternative B</p>	<p>Eolian landscape Riverine adaptation of ancestral Puebloan people</p>	<p>Historic Use Natural hydrology and healthy riparian communities Unusually large old-growth pinyon - juniper communities Unique association of birds Several rare plant species</p>
<p>Cane and Currant Creeks</p> <p>Considered in: Alternative A Alternative B</p>	<p>Two small tributary canyons that join La Verkin Creek just before it flows out of the park. These are remote and little visited examples of small perennial and seasonal streams.</p> <p>190.1 acres - Alternatives A and B</p>	<p>Riparian fluvial & aquatic springs and seeps</p>	<p>Paleontological deposits Lower elevation riparian systems Perennial and seasonal streams</p>
<p>North Creek and Dalton Wash Valley Bottoms</p> <p>Considered in: Alternative B</p>	<p>The canyon bottoms and adjacent slopes of the right and left forks of north Creek, and adjacent southern portions of Lee Valley and Little Creek. Also includes the westernmost portion of the Coalpits Wash drainage adjacent to the park boundary. The travel corridor along the Left Fork of North Creek is excluded.</p> <p>3,665.4 acres - Alternative B</p>	<p>Riparian fluvial & aquatic Springs and seeps Riverine adaptation of ancestral Puebloan people</p>	<p>Probable paleontological deposits Lower elevation riparian systems Perennial and seasonal streams</p>
<p>WILDCAT CANYON</p> <p>Considered in: Alternative B</p>	<p>The high deep slickrock canyons between the upper Left and Right Forks of North Creek and the western cliffs of Horse Pasture Plateau. Access is difficult and technical.</p> <p>504.0 Acres - Alternative B</p>	<p>Rock crevice and slickrock communities Springs and seeps Hanging canyons Eolian landscape</p>	<p>Excellent examples of slickrock and crack & crevice geology and hydrology Rare plant species likely Potential Mexican spotted owl habitat</p>
<p>Upper Coalpits</p> <p>Considered in: Alternative A</p>	<p>The upper reaches of Coalpits Wash, where a small perennial stream forms a narrow riparian corridor.</p> <p>161.3 acres - Alternative A</p>	<p>Riparian fluvial & aquatic Hanging canyons Riverine adaptation of ancestral Puebloan people</p>	<p>Relict plant and animal communities Evidence of ancestral Puebloan people and historic use</p>

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APPENDIXES

RESEARCH NATURAL AREA	GENERAL DESCRIPTION	ECOLOGICAL UNITS PRESENT IN THE RNA ¹	OTHER RESOURCE ATTRIBUTES
Upper La Verkin Creek (Including Willis and Beartrap Canyons) <i>Considered in: Alternative B</i>	The upper reaches of Beartrap, Willis and La Verkin Creeks from the park boundary downstream to the junction of Beartrap and La Verkin Creeks. These are deep forested canyons with perennial streams. Includes canyons and Bullpen Mountain. 1,176.4 acres – Alternative B	Riparian fluvial & aquatic Springs and seeps Hanging gardens	Medium sized and small perennial streams with intact riparian zones Breeding areas for mountain lion, Mexican spotted owls, and peregrine falcons
Lower La Verkin (Including lower Timber Creek) <i>Considered in: Alternative B</i>	The gorges of Timber Creek and La Verkin Creek below the La Verkin Creek Trail. These are deep narrow canyons with about 4 miles of perennial streams. Riparian vegetation, though narrow, is well developed, relatively undisturbed and includes some ponderosa pine. 221.1 acres – Alternative B	Riparian fluvial & aquatic Springs and seeps	Medium sized and small perennial streams with intact riparian zones Mixed-age stands of riparian deciduous trees Cryptobiotic soils Unique stands of large ponderosa pines at lower elevations

¹ Description of Ecological Units

Eolian Landscape – Areas where wind is the predominate shaper of the land. Features include unvegetated dunes, vegetated wind-deposited soils that are often deep, and wind erosion of exposed rock. The ability of eolian soils to capture and store water is enhanced by their sandy texture and depth.

Hanging Canyons - Canyons that are isolated from below by abrupt vertical cliffs, and are thus hanging above the rest of the terrain. As such hanging canyons contain plant and animal communities isolated from human and other influences that affect more accessible canyons. The large vertical relief in Zion National Park permits the occurrence of larger hanging canyons with a greater degree of isolation than elsewhere.

Hanging Gardens - Seeps issuing from vertical faces of Navajo Sandstone. These vary in size and create rare vertical wetlands habitats that support unique plant communities and endemic invertebrate species. Though found elsewhere on the Colorado Plateau, hanging gardens in Zion National Park are more numerous and larger, and contain species not found elsewhere.

Riverine Adaptation of Ancestral Puebloan People – Areas occupied by ancestral Puebloan people where they became adapted to life along large perennial watercourses of the Virgin River basin. This setting may have permitted a more sedentary lifestyle and greater populations than upland sites. Early excavations in Parunuweap Canyon provide "type sites" that are a benchmark for defining ancestral Puebloan people. Occupation occurred over several periods, and included a wide range of site types (pueblos, rock shelters, and cliff dwellings). The sites and their setting remain relatively intact.

Rock Crevice and Slickrock – Areas dominated by flat, sloping and vertical exposures of cross-bedded Navajo Sandstone. Plant and animal communities adapt to these settings that are at once harsh (due to sun, wind and temperature exposure) and accommodating (due to less competition, and greater water availability from runoff and seepage through cracks & joints in the rock). The result is the occurrence of several rare and endemic plant species.

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Relict Forests – Woodland communities that have never been logged or otherwise disturbed. They contain old-growth forests and specialized habitats for species such as Mexican spotted owl. Soils and moisture regimes differ from disturbed forests.

Relict Mesas – High mesa tops, isolated by steep cliffs and accessible to humans only by helicopter or arduous technical climbs. These generally lack large mammals and have fire regimes unaltered by humans. Vegetation, insect and herpetological communities are generally unaltered. Genetic isolation might be significant.

Riparian, Fluvial and Aquatic – Habitats associated with rivers. These are some of the most diverse and productive habitats. Riverine systems are adapted to flood disturbance, channel migration, and abundant free-flowing water. Flow patterns are essentially natural.

Slot Canyons – Deep narrow canyons, accessible only by traversing the stream channel, that are cooler and moister than in surrounding terrain. Streambeds in slot canyons are dominated by flooding. Their existence and formation is highly developed in Zion National Park. They are important as habitat for Mexican spotted owl and mesic mixed conifer communities.

Springs and Seeps – Water sources that are important habitat for specialized vegetation and wildlife including endemic snails. These are important sites for the study of groundwater hydrology.

APPENDIX J: BUREAU OF LAND MANAGEMENT PROCEDURES FOR PLAN AMENDMENT PROTEST

These protest procedures are only applicable to the Bureau of Land Management's (BLM) wild and scenic river recommendations that have been incorporated into this proposed *General Management Plan* for Zion National Park. These recommendations constitute an amendment to BLM's *St. George Resource Management Plan* dated March 14, 1999. The subject river segments, managed by the BLM's St. George Field Office (formerly the Dixie Resource Area), are contiguous to Zion National Park and include: Willis Creek (40 acres); Beartrap Canyon (40 acres); Goose Creek (120 acres); Shunes Creek (240 acres); the head of the Middle Fork of Taylor Creek (40 acres); and the head of Kolob Creek Narrows (40 acres). BLM and Zion National Park have been cooperating as partners and striving to reach joint conclusions as to eligibility, tentative classification, and suitability for entire river segments including portions on public lands contiguous to the park in Washington County, Utah. Although the BLM-managed river segments identified above were found not eligible for further study when considered on their own in BLM's original inventory, they have been found to be both eligible and suitable when considered in conjunction with the contiguous segments in the park.

The BLM's resource management planning process provides for an administrative review to the BLM Director if you believe approval of the St. George Field Office's Resource Management Plan Amendment incorporated into the *Zion National Park General Management Plan / Final Environmental Impact Statement* would be in error (see 43 CFR 1610.5-2). Careful adherence to the following guidelines will assist you in the preparation of a protest that will assure the greatest consideration of your point of view.

Only those persons or organizations who participated in the scoping or comment periods during the *Draft General Management Plan / Environmental Impact Statement* planning process leading to this proposed *Final General Management Plan / Environmental Impact Statement* may protest. If our records do not indicate that you had any involvement in any stage in the preparation of the *Final General Management Plan / Environmental Impact Statement*, your protest will be dismissed without further review. A protesting party may raise only those issues that he/she submitted for the record during the planning process. New issues raised in the protest period should be directed to BLM's St. George Field Office Manager for consideration in plan implementation, as a potential plan amendment, or as otherwise appropriate.

The period for filing a plan protest begins with the Environmental Protection Agency publication of the Notice of Availability of the *Final Environmental Impact Statement* containing the provision for an extension of time. To be considered timely, your protest must be postmarked no later than the last day of the protest period. Although not a requirement, we suggest that you send your protest by certified mail, return receipt requested.

Protests must be in writing to: Director, Bureau of Land Management.

Attn: Ms. Brenda Williams, Protests Coordinator
WO-210/LS-1075

Department of the Interior
Washington, DC 20240

Overnight Mail address is: Director, Bureau of Land Management

Attn: Ms. Brenda Williams, Protests Coordinator (WO-210)

1620 L Street, NW, Rm 1075

Washington, DC 20036

Phone: 202/452-5110

Protests filed late or with other BLM offices shall be rejected. To be considered complete, your protest must contain, at a minimum, the following information:

1. The name, mailing address, telephone number, and interest of the person filing the protest.
2. A statement of the issues being raised. This must be specific to BLM's wild and scenic river recommendations and land use plan amendment incorporated into the *Final General Management Plan / Environmental Impact Statement*; not to decisions to be made by Zion National Park or the park's plan as a whole.
3. Identification of the parts of BLM's land use plan amendment being protested. To the extent possible, this should be done by reference to specific pages, paragraphs, sections, tables maps, etc., included in the document. This, again, must be specific to BLM's wild and scenic river recommendations and land use plan amendment; not to other parts of the park's plan.
4. A copy of all documents addressing the issue or issues that you submitted during the planning process, or a reference to the date the issue or issues were discussed by you for the record.
5. A concise statement explaining why the Utah BLM State Director's proposed decision is believed to be incorrect. This is a critical part of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents, environmental analysis, or available planning records (i.e., meeting minutes or summaries, correspondence). A protest that merely expresses disagreement with the proposed decision, without any data, will not provide BLM with the benefit of essential information and insight. In this case, the Director's review will be based on the existing analysis and supporting data.

At the end of the 30-day protest period and after the Governor's consistency review, the BLM's land use plan amendment, excluding any portions under protest, will become final. Approval will be withheld on any portion of BLM's land use plan amendment under protest until final action has been completed on such protest.

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PREPARERS

Core Team

- Leon J. Clifford, Project Manager, Denver Service Center (now with the Atlanta regional office). B.S. (Environmental Science) and B.L.A. (Landscape Architecture). Twenty-four years with the National Park Service. Responsible for project budget and schedule.
- Dan Cohan, Geographic Information Systems Specialist, Zion National Park (now with Buenos Aires National Wildlife Refuge). B.S. (Wildlife Biology), M.S. (Forest Science (GIS)). Three years with the National Park Service and 17 years with multiple federal and state land management agencies including the U.S. Fish and Wildlife Service, U.S. Forest Service, BLM, and U.S. Army Corps of Engineers. Responsible for implementing GIS data analyses including resource values and sensitivities assessments and landscape predictive models, the development of alternative GIS maps and databases and wilderness scenarios, and contributed to the impact analyses.
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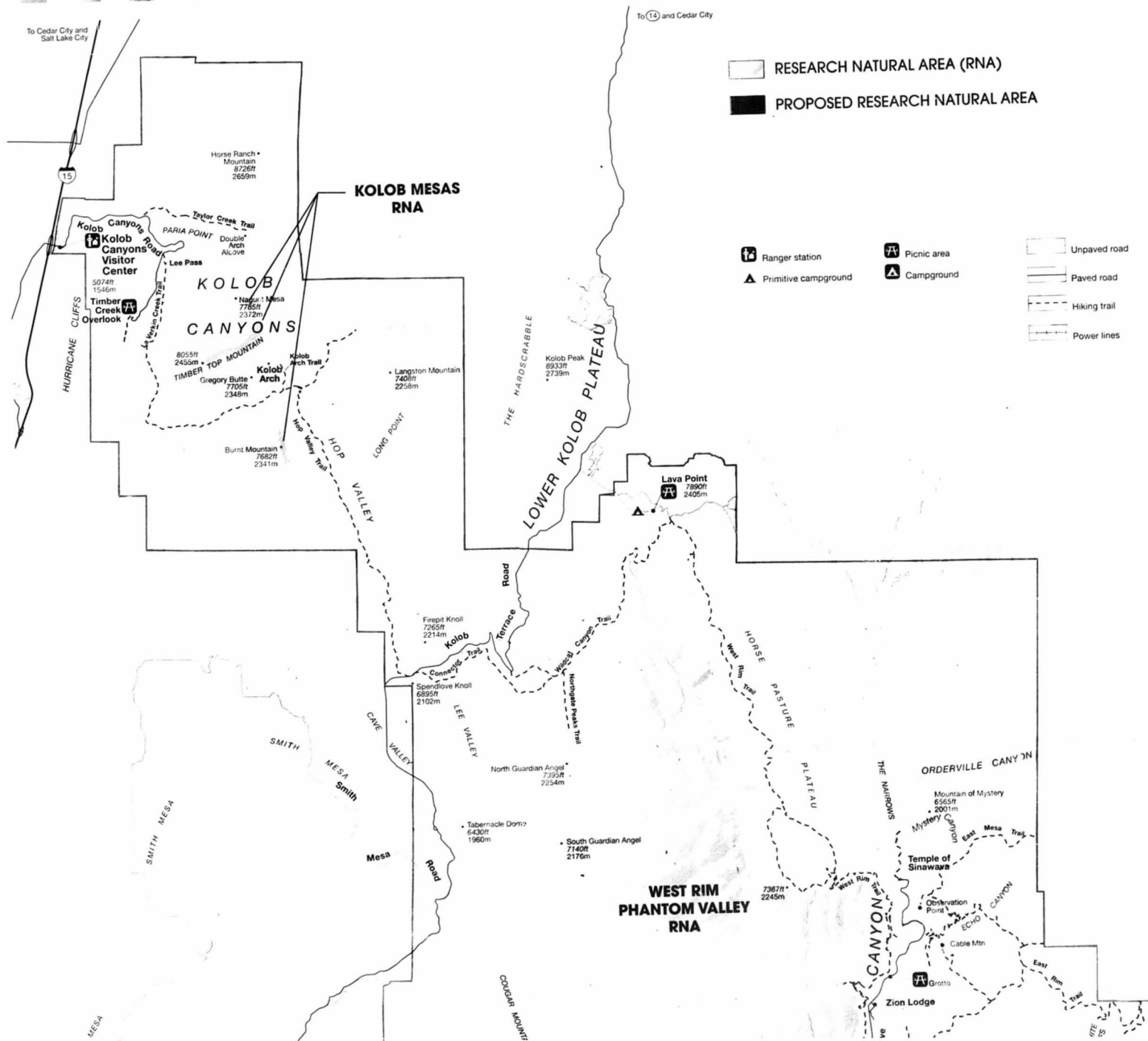
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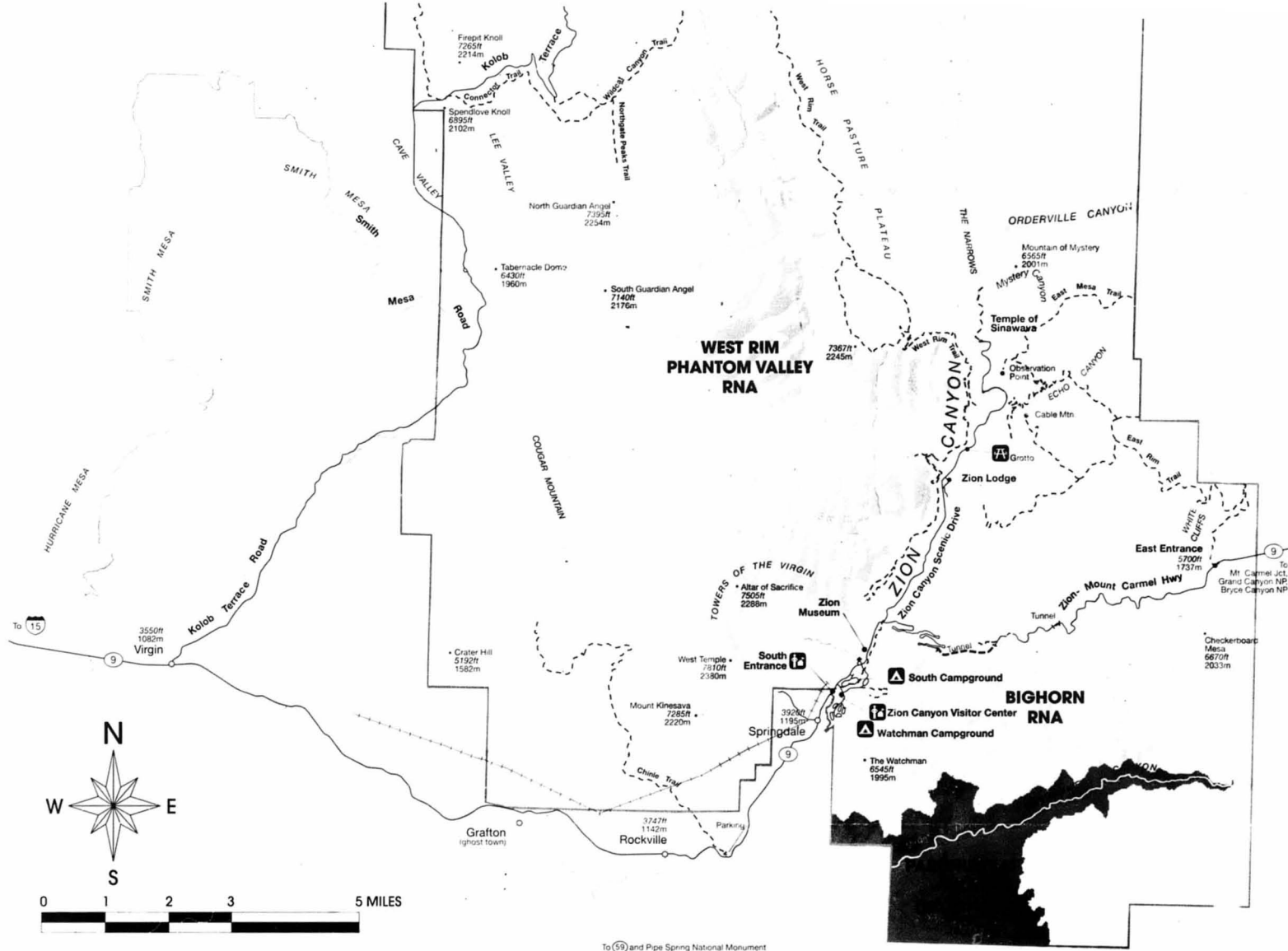
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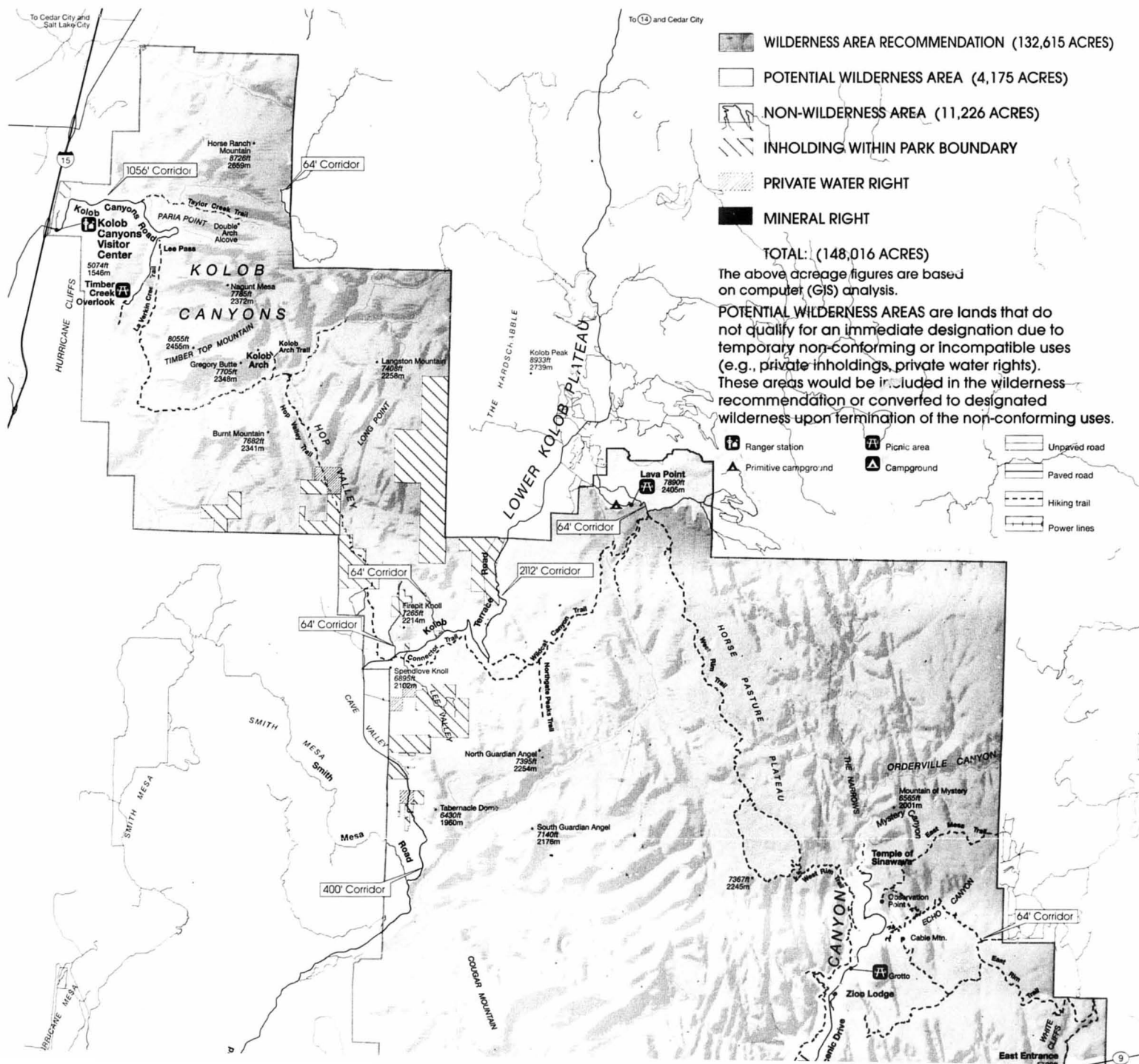
Existing private property rights, including land ownership and mineral and water rights are not shown on this map (see the Wilderness Recommendation and Land Status map). The National Park Service recognizes all private property rights in the park and respects the rights of the owners. If and when the private rights are acquired, these areas would be managed like the surrounding park lands.

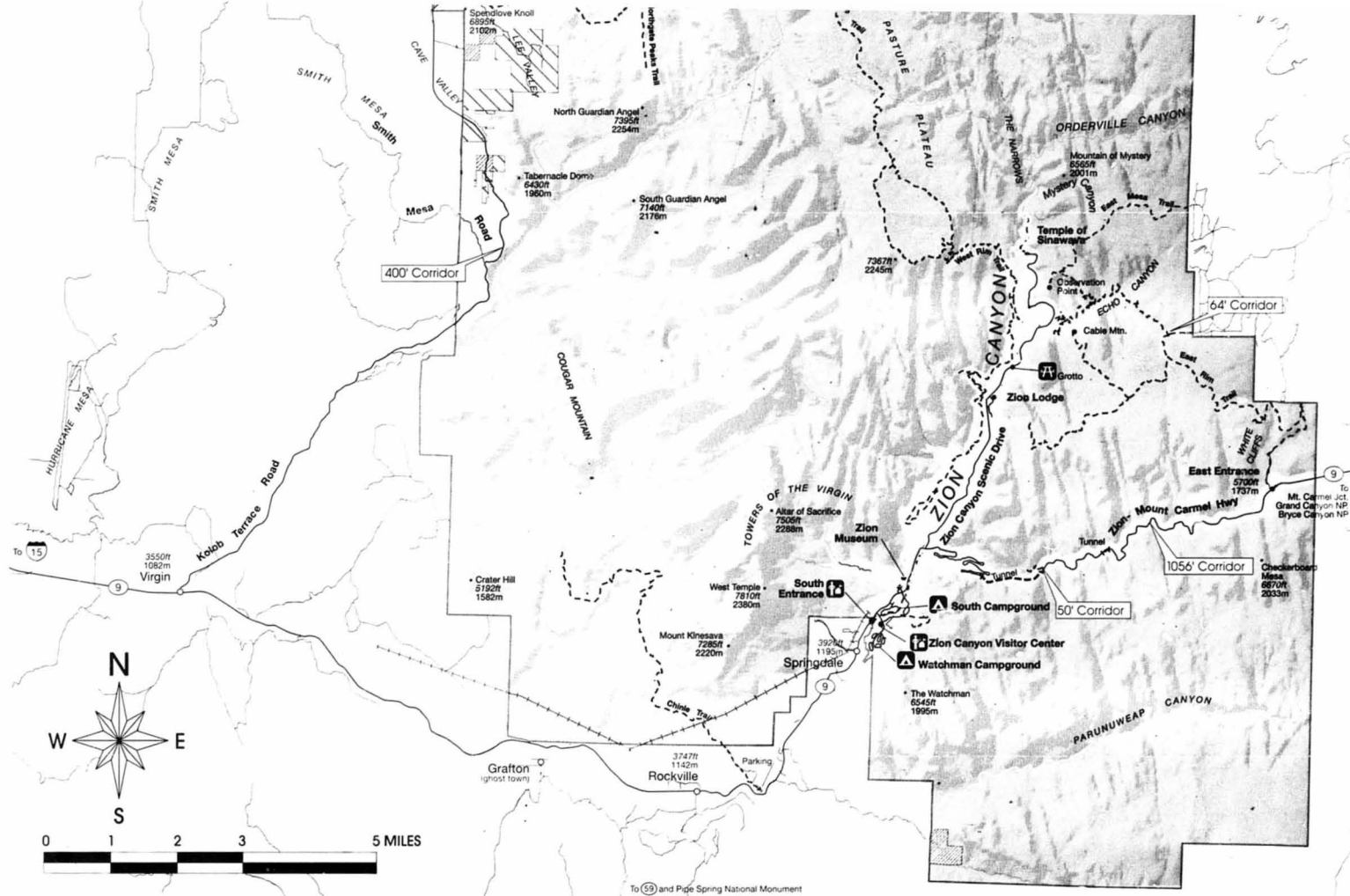
No Action

Zion National Park, Utah

United States Department of the Interior • National Park Service







This map is based on the 1978 recommendation that was submitted to Congress. The map includes changes that have been made since that time due to the acquisition of inholdings, state surface ownership, and mineral rights, grazing rights, and water rights and the inclusion of a valid existing water right on Camp Creek that was overlooked in 1978. All inholdings and lands with existing private water rights are shown as potential wilderness areas. Until the inholdings and lands with private rights are acquired, the National Park Service recognizes and respects the rights of the owners. Private vehicle access to the inholdings on existing roads would continue until such time as the inholdings and associated roads are acquired.

Road/trail corridors displayed on this map are intended to differentiate recommended potential and non-wilderness areas. They may or may not correspond to the legal rights-of-way.

Recommended Wilderness and Land Status

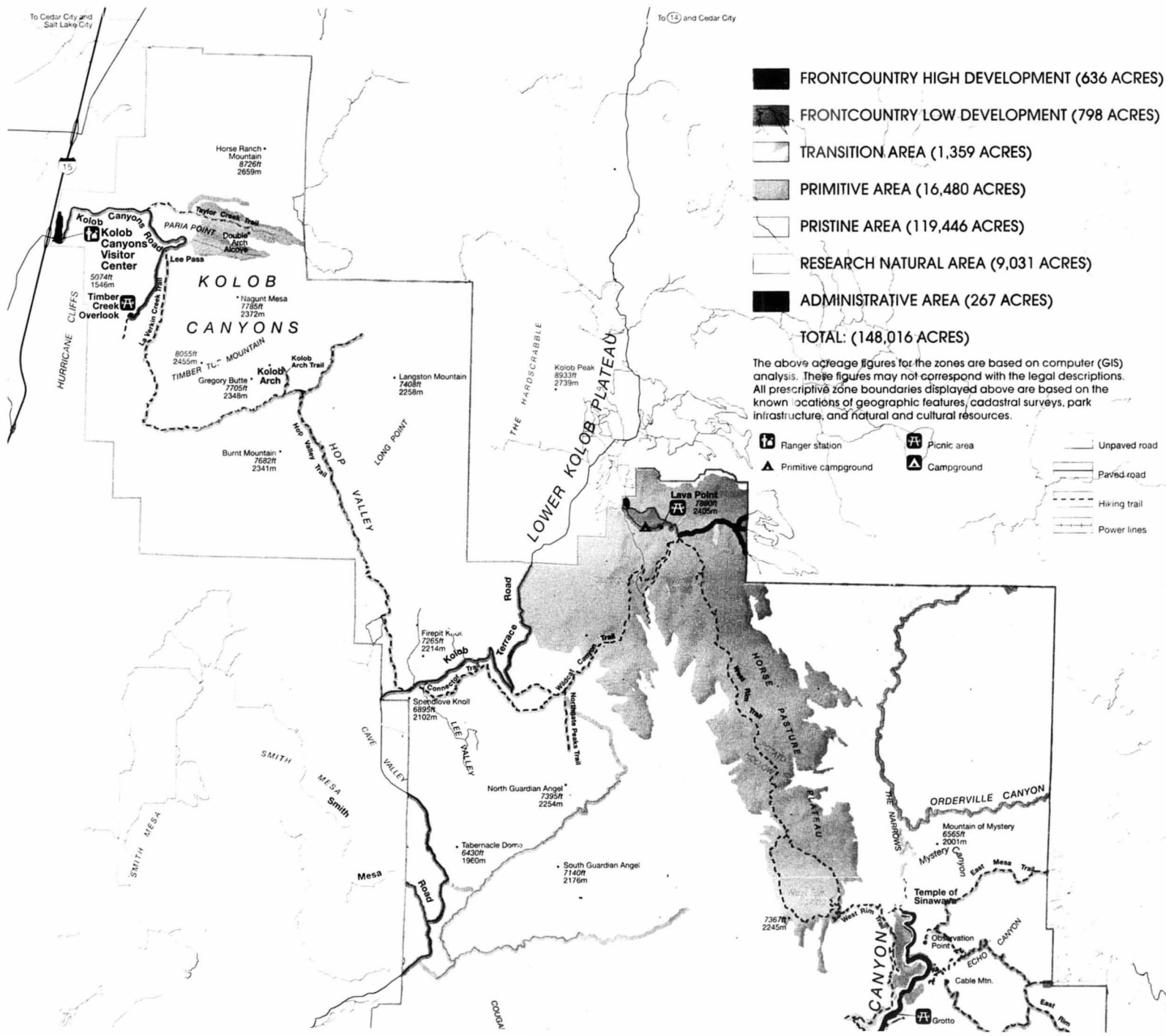
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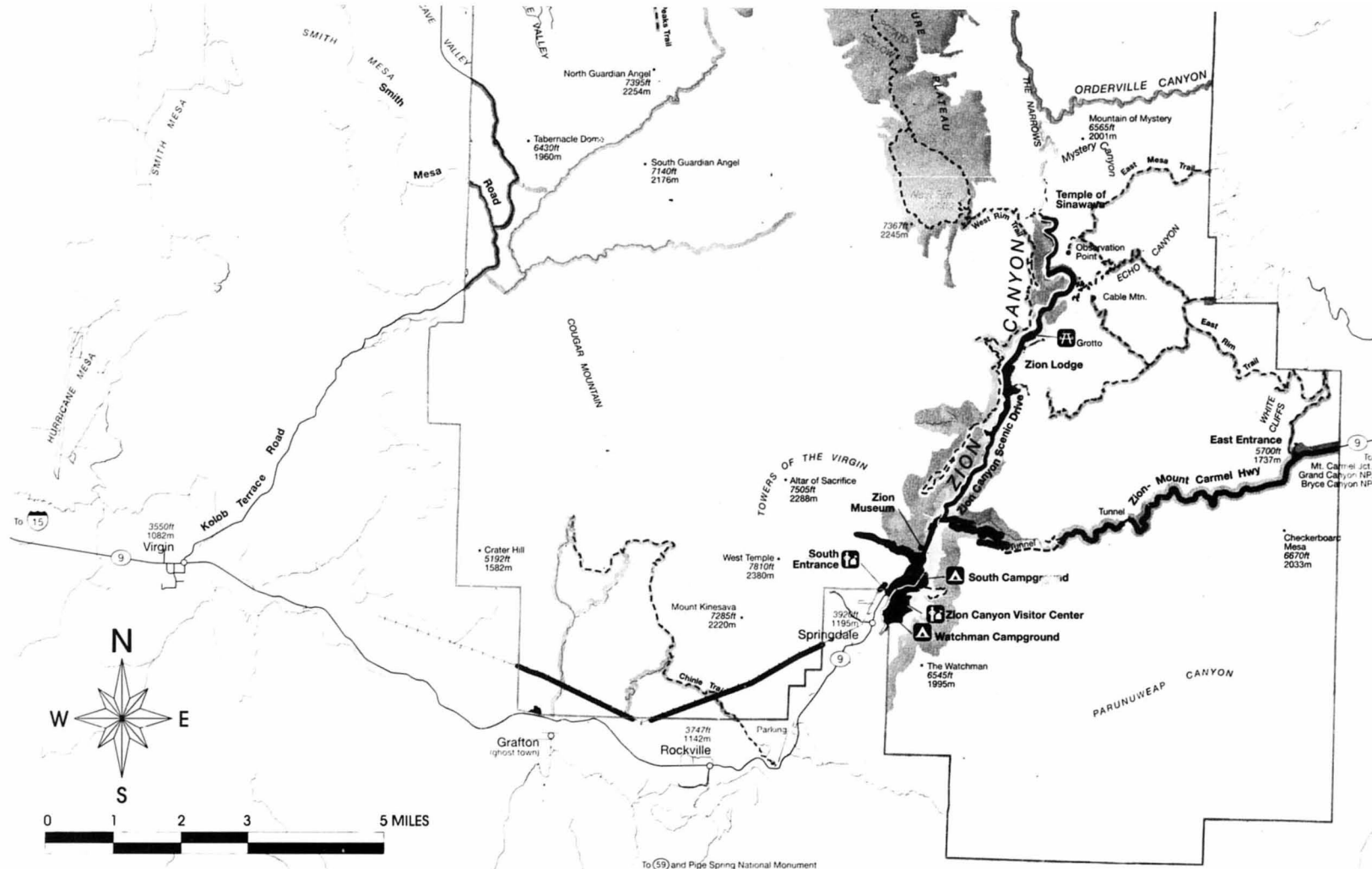
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2





This zoning map shows how private inholdings and other lands with private water and mineral rights within Zion National Park would be managed if they are acquired in the future. Until the private rights (as shown on the Wilderness Recommendation (1978) and Land Status map) are acquired, the National Park Service recognizes that the inholdings are private lands and it respects the valid rights of the landowners and mineral and water right owners.

Preferred Alternative

Zion National Park, Utah

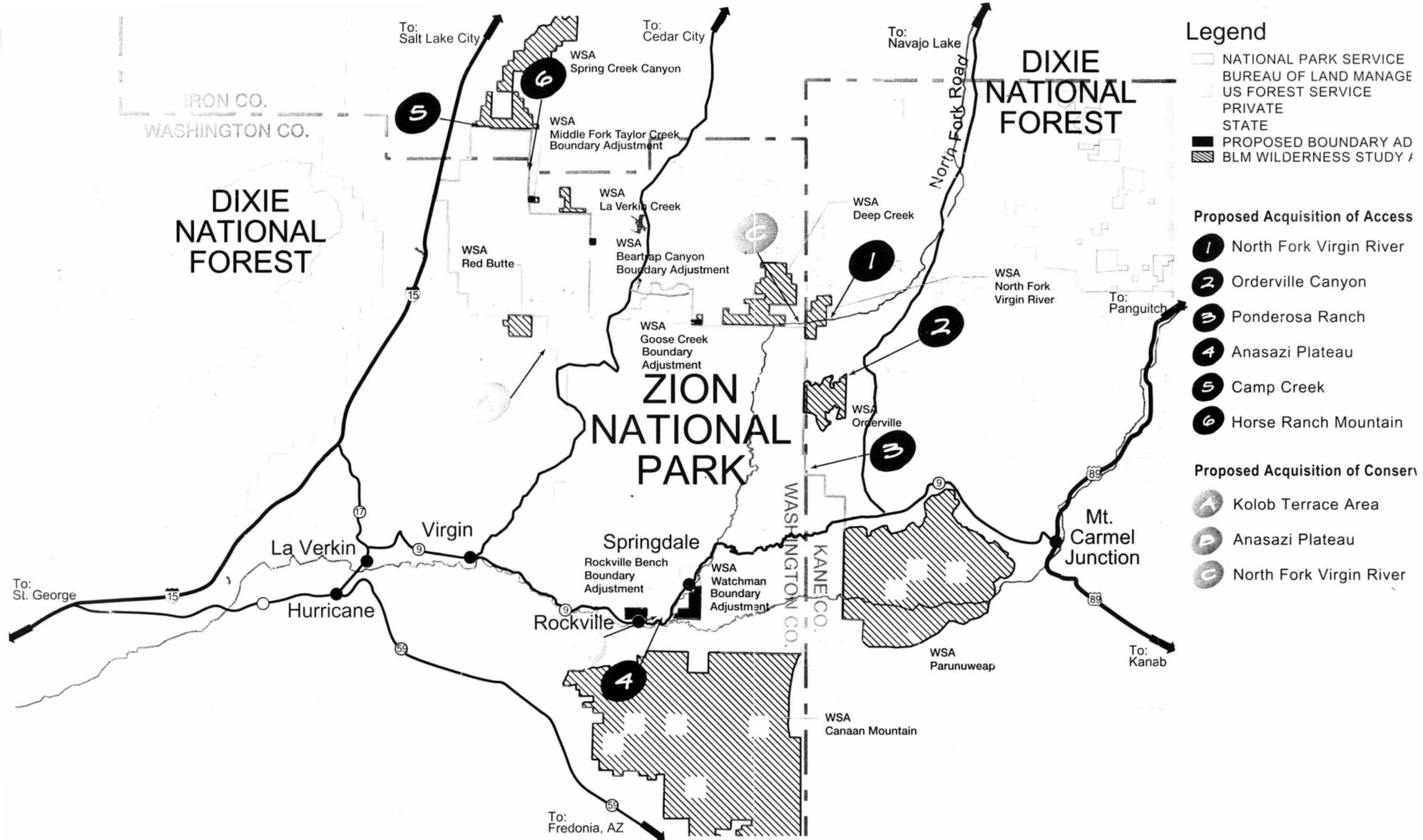
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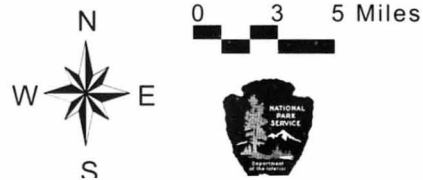


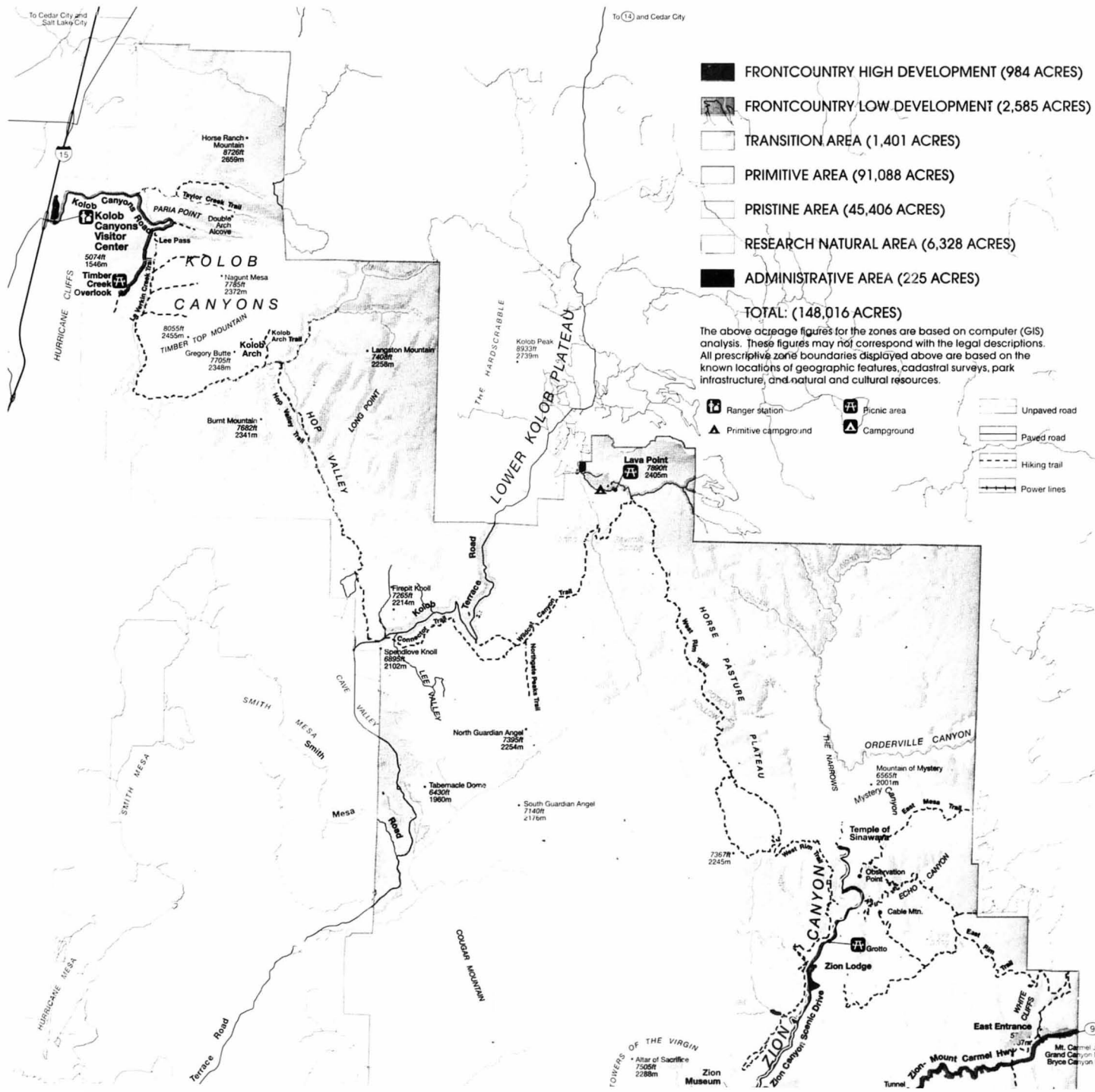
Proposed Park Boundary Adjustments and Adjacent Landownership

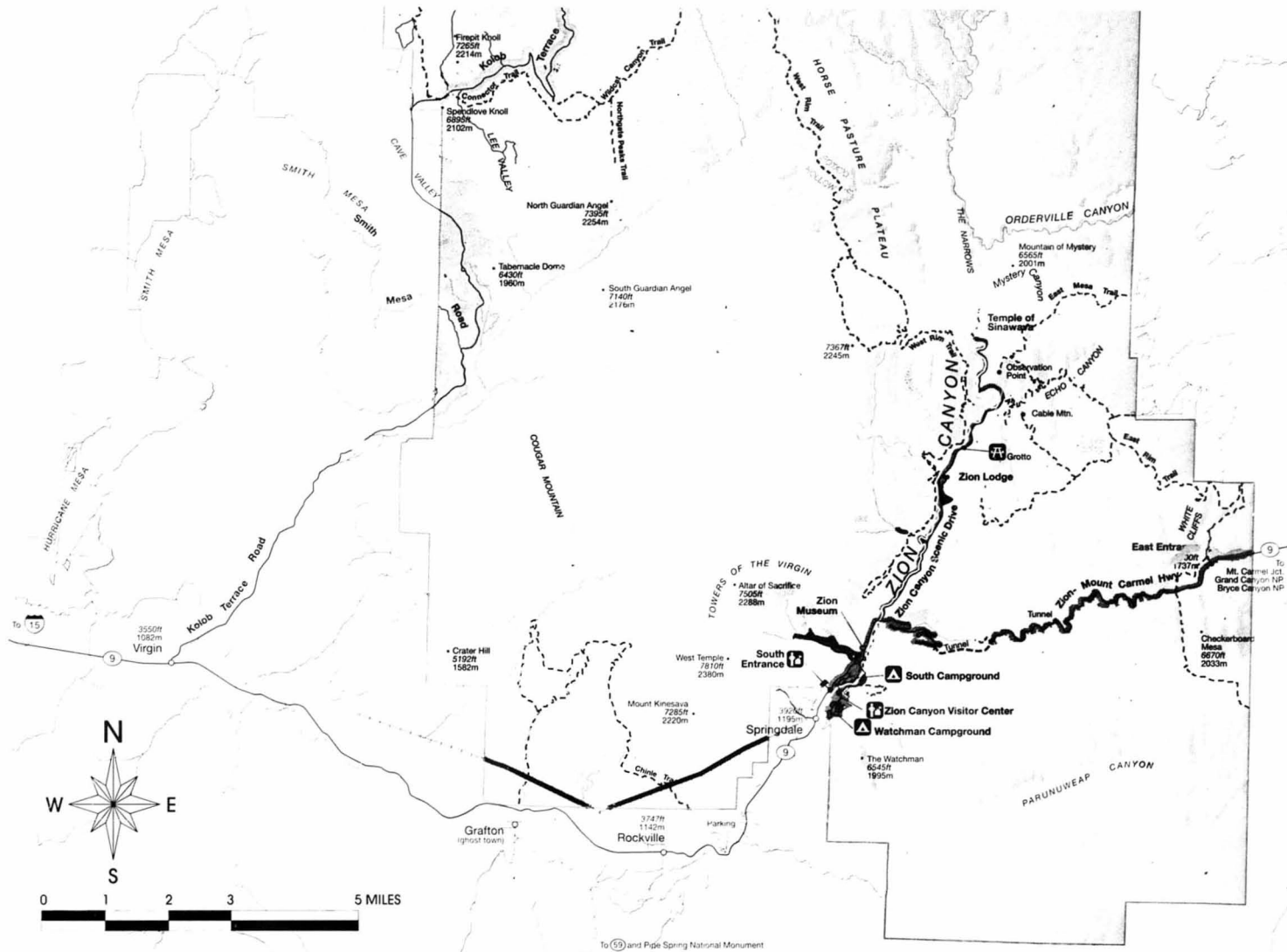
Zion National Park, Utah

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Alternative A

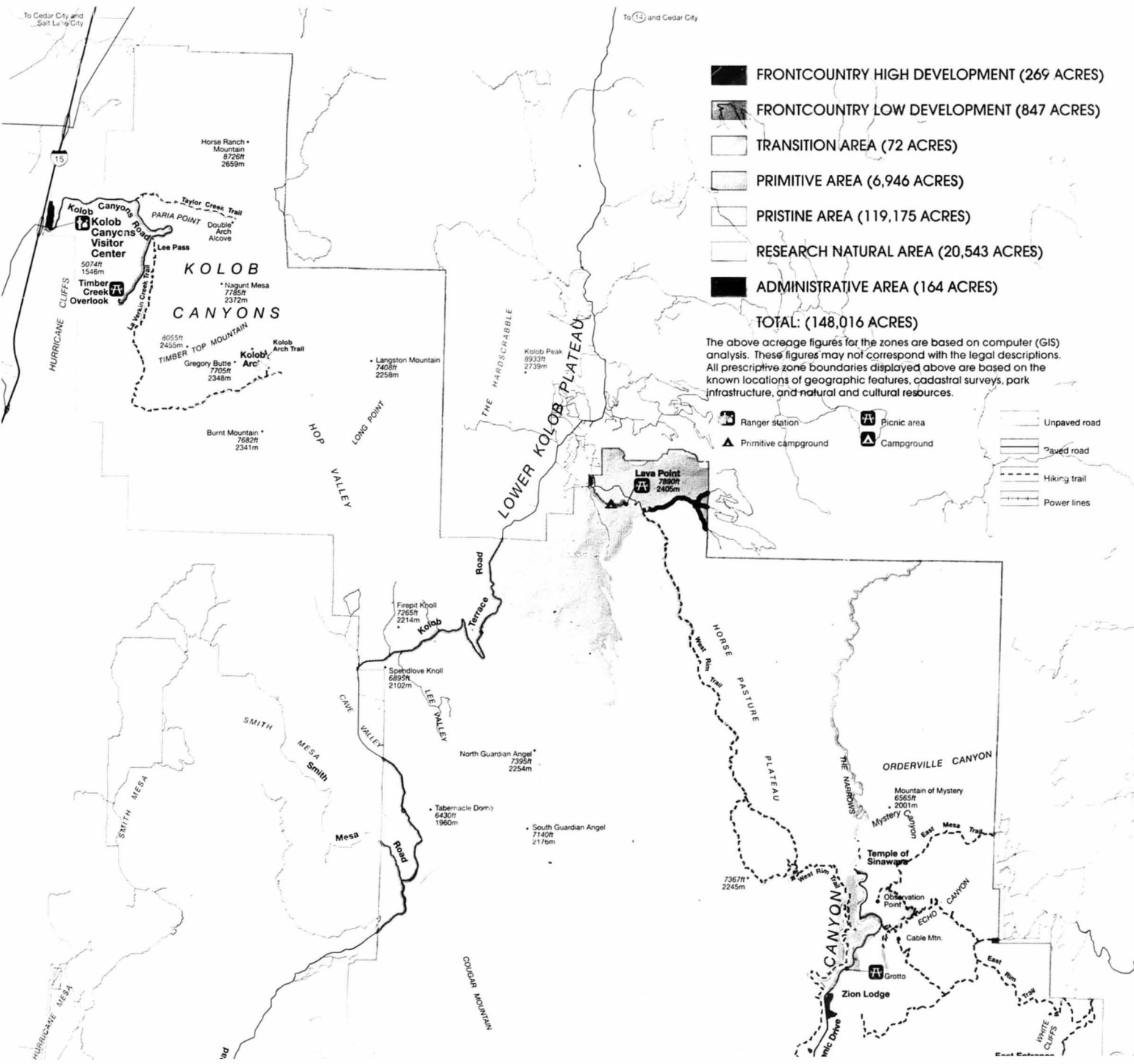
Zion National Park, Utah

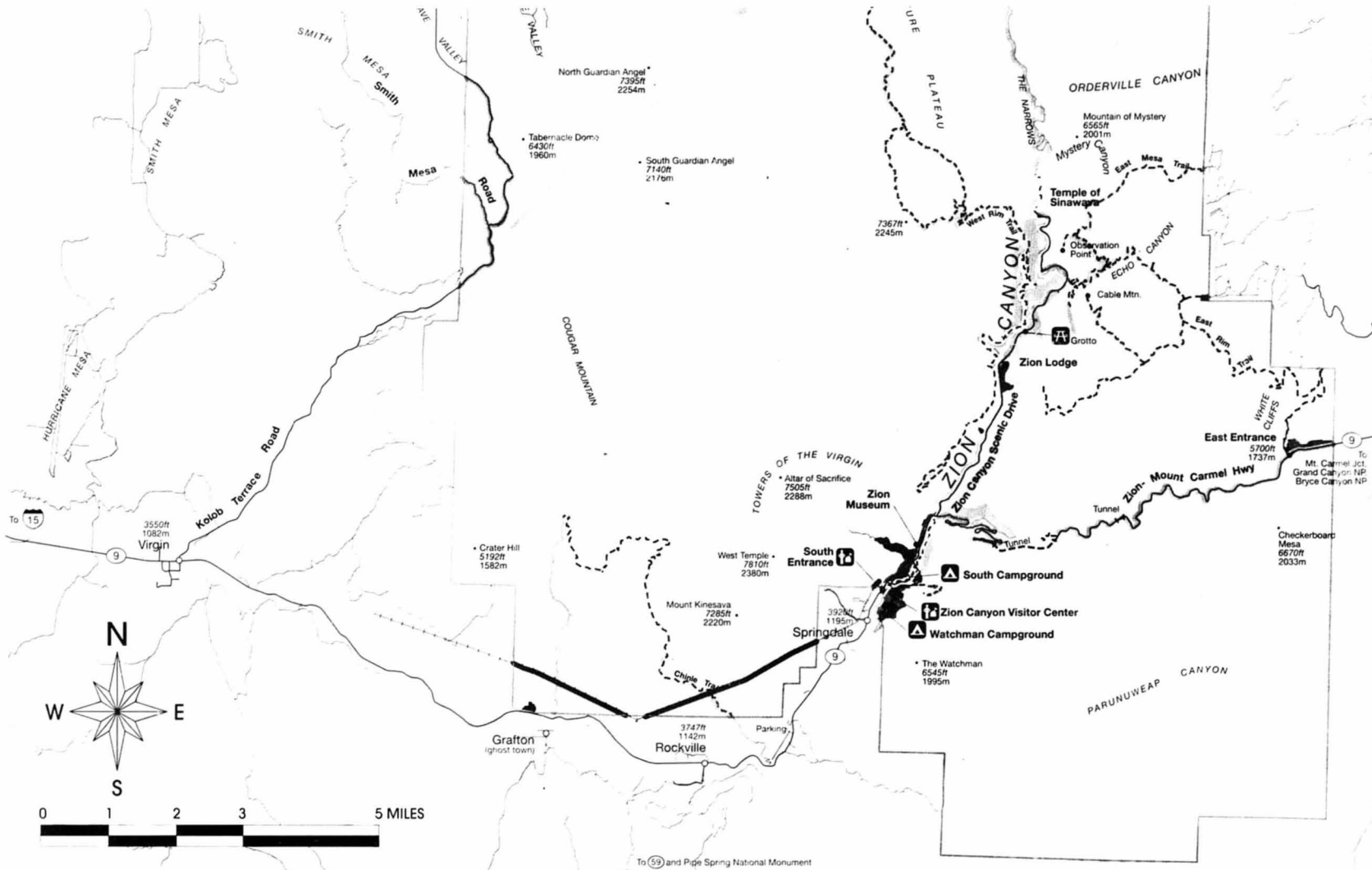
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This zoning map shows how private inholdings and other lands with private water and mineral rights within Zion National Park would be managed if they are acquired in the future. Until the private rights (as shown on the Wilderness Recommendation (1978) and Land Status map) are acquired, the National Park Service recognizes that the inholdings are private lands and it respects the valid rights of the landowners and mineral and water right owners.

Alternative B

Zion National Park, Utah

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TABLE 5: SUMMARY OF THE MANAGEMENT ALTERNATIVES

	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
General Management	Continue to manage Zion as in the past, relying on existing plans.	Apply a new zoning scheme, focused on protecting the diversity of park resources and providing a range of quality visitor experiences within that context.	Apply a new zoning scheme, which would provide opportunities for more widespread and increased use of Zion while still protecting park resources.	Apply a new zoning scheme, which would provide a high degree of resource protection while still providing a range of recreational opportunities.
Carrying Capacity	Carrying capacity not addressed.	Write additional plans to address specific types and levels of visitor use, and set carrying capacities through indicators and standards. Establish a long-term program to monitor park resources and visitor experiences.	Same as the preferred alternative.	Same as the preferred alternative.
Overall Backcountry Visitor Use Management	Continue to limit backcountry group size to 12 people/party. Continue to allow an unlimited number of parties/area except for the areas listed below. Continue to limit visitor day use in the Left Fork of North Creek and in the Narrows from the top down. Continue to limit overnight use in the Narrows, La Verkin Creek, and the West Rim trail.	Set interim group size limits for hikers and saddle stock groups in the primitive and pristine zones. In the pristine and primitive zones hiker group size would be 12 per party. In the primitive zone a maximum of six saddle stock and six people would be allowed per group. No saddle stock permitted in the pristine zone. Interim encounter rates would be set for hikers and saddle stock in the pristine and primitive zones. Hikers would usually not expect to encounter other groups in the pristine zone, and generally would encounter no more than 12 groups per day in the primitive zone. Saddle stock groups would encounter no more than one other group per day in the primitive zone. Same as the no-action alternative. In addition to the existing limits, may need to limit or reduce visitor numbers on 12 trails and routes: Camp Creek, the Middle Fork of Taylor Creek, La Verkin Creek trail, Beartrap Canyon, Willis Creek, Right Fork of North Creek, Narrows from the northern park boundary to Orderville Canyon, Orderville Canyon, Mystery Canyon, upper Hidden Canyon, Dalton Wash, and upper Coalpits Wash. All recreational use would be prohibited on routes in research natural areas, including Goose and upper Shunes Creeks and Parunuweap Canyon. (All trails and routes in the recommended wilderness would be subject to visitor use limits.)	Same as the preferred alternative. Same as the preferred alternative. Same as the no-action alternative. In addition to the existing limits, may need to limit or reduce visitor numbers in the Narrows from the northern park boundary to Orderville Canyon, Mystery Canyon, and the La Verkin Creek trail. Prohibit all recreational use on routes in research natural areas, including upper Coalpits Wash and upper Shunes Creek. (All trails and routes in the recommended wilderness would be subject to visitor use limits.)	Same as the preferred alternative. Same as the preferred alternative. Same as the no-action alternative. In addition to the existing limits, may need to limit or reduce visitor numbers on 17 trails and routes: Camp Creek, the North, Middle, and South Forks of Taylor Creek, upper La Verkin Creek, La Verkin Creek trail, Hop Valley, Northgate Peaks, Connector trail, the Narrows from the park boundary to Mystery Canyon, Mystery Canyon, Orderville Canyon, Hidden Canyon, upper Coalpits Wash, Watchman, upper Emerald Pool, Sand Bench, and Observation Point. Prohibit all recreational use on routes within research natural areas, including Beartrap Canyon, Willis Creek, Goose Creek, the Right Fork of North Creek, Dalton Wash., and Parunuweap Canyon. (All trails and routes in the recommended wilderness would be subject to visitor use limits.)
Overall Park Development	Undertake no new construction or major management changes except for operating the main canyon transportation system and already approved facilities (e.g., a research facility in the south entrance-main Zion Canyon area).	Build already approved facilities. Construct/replace some minor facilities, such as picnic sites and ranger residences.	Build already approved facilities. Construct a number of new developments, including picnic sites, trails, focused visitor facilities, and ranger residences.	Undertake a minimal amount of new development in the park, other than already approved facilities.

	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
<i>Park Development And Visitor Use Management By Specific Park Area</i>				
Kolob Canyons Area	Undertake no new actions; maintain existing facilities.	<p>Possibly limit the number of vehicles in the future.</p> <p>Possibly expand the Kolob Canyons visitor center.</p> <p>No new visitor facilities other than possibly installing restrooms</p> <p>Adjust trailhead parking lots to reflect trail use capacities.</p>	<p>Allow unlimited traffic.</p> <p>Expand the Kolob Canyons visitor center.</p> <p>Improve or add focused visitor facilities, trailheads, trails, parking lots, and picnic areas.</p> <p>Adjust trailhead parking lots to reflect trail use capacities.</p>	<p>Limit the number of vehicles in the future if necessary.</p> <p>Maintain the existing Kolob Canyons visitor center.</p> <p>No new visitor facilities provided.</p> <p>Same as the preferred alternative, except remove the South Fork of Taylor Creek trailhead and restore the area.</p>
Kolob-Terrace Road Area	No new actions.	<p>Remove the Firepit Knoll residence and road and restore the area.</p> <p>Possibly improve existing trailheads and add picnic sites.</p> <p>Build a focused visitor/ranger residence/office on BLM lands near the park boundary at North Creek.</p>	<p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Build a bicycle trail and associated parking area along the road.</p>	<p>Same as the preferred alternative.</p> <p>Reduce or remove trailhead parking and trails at several sites.</p> <p>Same as the preferred alternative.</p>
Lava Point	Undertake no new actions; continue to maintain existing facilities.	<p>Limit vehicle traffic if necessary.</p> <p>Maintain existing visitor facilities.</p> <p>Replace the existing ranger residence.</p> <p>Continue to close the roads east of the West Rim trailhead to public recreational use.</p>	<p>Same as the preferred alternative.</p> <p>Possibly add a focused visitor facility, nature trail, and picnic tables and possibly expand the existing campground to a total of 12 sites.</p> <p>Same as the preferred alternative.</p> <p>Open the roads east of the West Rim trailhead to the park boundary to public motorized use.</p>	<p>Same as the preferred alternative except: for the addition of a focused visitor facility and nature trail.</p> <p>Maintain existing visitor facilities.</p> <p>Same as the preferred alternative.</p> <p>Gate and close the road near the Lava Point ranger residence to motorized visitor access beyond that point. Move the West Rim trailhead to the ranger station/residence area.</p>
South Entrance And Main Zion Canyon	<p>Undertake no new actions except for those in previously approved plans.</p> <p>Continue to maintain existing facilities.</p> <p>Continue existing activities.</p>	<p>Possibly add picnic sites in disturbed areas, in addition to facilities approved in other plans.</p> <p>Continue to maintain existing facilities.</p> <p>Continue existing activities.</p>	<p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p>	<p>Same as the preferred alternative.</p> <p>Remove facilities and structures from Oak Creek above the maintenance area. Continue to maintain other existing facilities.</p> <p>Reduce the number and frequency of shuttles going past the lodge. Reduce visitor numbers on several frontcountry trails.</p> <p>Remove the horse concession operation on the Sand Bench trail.</p>

	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
Zion Canyon Lodge	Undertake no major change in the functions and operation of the lodge. Continue to maintain the historic qualities of the lodge through contract provisions and in a commercial services plan.	Same as the no-action alternative.	Same as the no-action alternative.	Convert the lodge into a facility for research and science-based education.
North Fork Of The Virgin River	Maintain the existing riverbank armor and levees.	Identify strategies for managing visitor use and determine how and where parts of the river channel and floodplain would be restored to a more natural condition.	Same as the preferred alternative.	Same as the preferred alternative; Remove all water collection structures at springs in the main canyon.
East Entrance And The Zion-Mt. Carmel Highway Area	Undertake no new actions; continue to maintain existing facilities.	Possibly implement a voluntary shuttle system. Possibly add a few picnic sites and restrooms in previously disturbed areas. Improve the trailhead for the East Rim trail. Remove and rehabilitate some pullouts along the Zion-Mt. Carmel Highway.	Same as the preferred alternative. Possibly add a focused visitor facility, one or two short nature trails, and a few picnic sites and restrooms in previously disturbed areas. Same as the preferred alternative.	Implement a mandatory shuttle system. (Continue to permit nonrecreational and community traffic to drive the road.) Build a full service visitor center near the east entrance. Improve the trailhead for the East Rim trail; redesign parking areas along the Zion - Mt. Carmel Highway, and remove and rehabilitate all pullouts.
Recommended wilderness, Potential Wilderness, and Nonwilderness (in acres and percentage of the park) Potential wilderness areas are lands that currently do not qualify for wilderness designation due to nonconforming or incompatible uses, e.g., private inholdings, private water rights.	Recommended wilderness: 132,615 acres (90%) Potential wilderness: 4,175 acres (3%) Nonwilderness: 11,226 acres (8%)	Same as the no-action alternative.	Same as the no-action alternative.	Same as the no-action alternative.
Research Natural Areas	Continue to manage the three existing research natural areas, covering about 31,000 acres (21% of the park), as they have in the past.	Deauthorize the three existing research natural areas. Designate 9,031 acres (6% of the park) as new research natural areas and manage the RNAs as per NPS policy. An interim limit of 12 or fewer people/group set for educational, research, and administrative groups.	Deauthorize the three existing research natural areas. Designate 6,328 acres (4% of the park) as new research natural areas and manage the RNAs as per NPS policy. Same as the preferred alternative.	Deauthorize the three existing research natural areas. Designate 20,543 acres (14% of the park) as new research natural areas and manage the RNAs as per NPS policy. Same as the preferred alternative.
Parunuweap Canyon	Continue to close the canyon to recreational use.	Designate Parunuweap as a research natural area open to authorized research and NPS-guided educational groups.	Open the main canyon to limited NPS or NPS-sanctioned guided interpretive trips between June 16 and January 15.	Designate the entire canyon as a research natural area and open to authorized research and NPS-guided educational groups.
Proposed Wild & Scenic River Designations	Propose no drainages for addition to the national wild and scenic rivers system.	Recommend five drainages and their tributaries as eligible and suitable for addition to the national wild and scenic rivers system: the North Fork of the Virgin River above and below the Temple of Shalwava; the East Fork of the Virgin River ; North Creek; La Verkin Creek; Taylor Creek. Recommend six river segments on BLM lands adjacent to the park as eligible and suitable for addition to the national wild and scenic rivers system.	Same as the preferred alternative. Same as the preferred alternative.	Same as the preferred alternative. Same as the preferred alternative.

ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
Proposed Boundary Adjustments	Propose no boundary adjustments or access or conservation easements.	Propose five BLM areas, totaling approximately 950 acres, for transfer to the park.	Same as the preferred alternative.	Same as the preferred alternative.
		Propose nine access easements, totaling about 15 miles, on lands outside the park boundary.	Same as the preferred alternative.	Same as the preferred alternative.
		Propose three conservation easements, totaling 2,220 acres, on private lands outside the park.	Same as the preferred alternative.	Same as the preferred alternative.

TABLE 6: COMPARISON OF THE MANAGEMENT ZONES AND WILDERNESS PROPOSALS IN THE ACTION ALTERNATIVES (acres)

ZONE	NONWILDERNESS	POTENTIAL WILDERNESS*	RECOMMENDED WILDERNESS	TOTAL ACRES	% OF PARK
Preferred Alternative					
Frontcountry High Development	636	0	0	636	0.4
Frontcountry Low Development	798	0	0	798	0.5
Transition	1,322	0	37	1,359	0.9
Primitive	2,860	18	13,602	16,480	11
Pristine	5,339	4,023	110,083	119,445	81
Research Natural Area	4	13416	8,893	9,031	6
Administration	267	0	0	267	0.2
Total	11,226	4,175	132,615	148,016	100
Alternative A					
Frontcountry High Development	984	0	0	984	0.7
Frontcountry Low Development	2,585	0	0	2,585	2
Transition	1,341	0	60	1,401	.9
Primitive	4,775	3,994	82,319	91,098	61
Pristine	1,314	0	44,092	45,406	31
Research Natural Area	2	181	6,145	6,328	4
Administration	225	0	0	225	0.2
Total	11,226	4,175	132,615	148,017	100
Alternative B					
Frontcountry High Development	269	0	0	269	0.2
Frontcountry Low Development	847	0	0	847	0.6
Transition	61	0	10	71	< 0.1
Primitive	2,491	0	4,455	6,946	5
Pristine	7,387	3,985	107,802	119,174	80
Research Natural Area	6	189	20,348	20,543	14
Administration	164	0	0	164	<0.1
Total	11,226	4,175	132,615	148,016	100

NOTE: All acreages were calculated using GIS data layers, graphical display, and summary statistics. Total acreages and percentages vary between the alternatives due to rounding. The acre figures may not correspond with legal description acre figures.

*Potential wilderness areas are lands that do not qualify for immediate designation due to temporary nonconforming or incompatible uses (e.g., private inholdings, private water rights). The Park Service would add these areas to the wilderness recommendation or convert them to designated wilderness if and when private rights are required or relinquished

TABLE 7: SUMMARY OF THE IMPACTS OF THE ALTERNATIVES

TOPIC/RESOURCE VALUE	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
Air Quality	Minor to moderate, localized, increase in air quality impacts due to increase in expected visitation and retention of existing traffic patterns and vehicle use.	Same as the no-action alternative, except air quality may improve compared to the no-action alternative because the number of vehicles on the Kolob Canyons Road may be limited in the future.	Same as the preferred alternative.	Minor to moderate improvement in air quality due to: the reduction in number of facilities and visitor use levels; the institution of a mandatory shuttle system on the park's east side; possible limits on vehicle numbers on the Kolob Canyons and Kolob-Terrace Roads; and the reduction in the number and frequency of the Zion Canyon shuttles.
		Minor, short-term decrease in local air quality due to construction activities	Same as the preferred alternative.	Same as the preferred alternative.
Water Quality	Moderate, localized, adverse effects on water quality due to increased use.	Minor, localized adverse effects on water quality, such as increased turbidity, sedimentation, and bacterial contamination, due to increased use. Mitigation would include visitor management, improved waste management, and visitor education.	Same as the preferred alternative.	Minor long-term improvement in water quality due to decreased use and improved visitor management. Mitigation would be similar to the preferred alternative.
		Minor, short-term increases in turbidity and sedimentation during construction, which could be mitigated through accepted construction practices.	Same as the preferred alternative.	Same as the preferred alternative.
		Moderate, short-term increases in turbidity from river restoration measures. Occasional episodes of increased turbidity and sedimentation would occur for several years as the channel adjusts.	Same as the preferred alternative.	Same as the preferred alternative.
Floodplain of the North Fork of the Virgin River	Zion Lodge and the park support facilities at Birch Creek would remain within the probable maximum floodplain because no reasonable alternative locations are available.	Same as the no-action except for the addition of new picnic areas.	Same as the preferred alternative.	Same as the preferred alternative.
	Minor to moderate, long-term increase in the number of people exposed to flood hazards in Zion Canyon due to increased day use.	Same as the no-action alternative except for a minor increase in the number of people exposed to flood hazards in Zion Canyon due to the addition of picnic areas within the probable maximum floodplain.	Same as the preferred alternative.	Minor decrease in the number of people exposed to flood hazards due to decreased day use in primitive zones.
	Moderate to major, long-term impairment of floodplain functions/processes would continue along 4.5 miles of river in the park due to past channelization. Moderate to major, adverse cumulative impacts on natural floodplain values would result.	Major, long-term, beneficial effect on natural river function/values along portions of the river in the park and moderate, beneficial, cumulative impact on natural floodplain values due to river restoration.	Same as the preferred alternative.	Same as the preferred alternative.

TOPIC/RESOURCE VALUE	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
Riparian/Wetland Communities	<p>Continued decline and increased dryness of the riparian system along 4.5 miles of the river as a result of the isolation of the North Fork from its floodplain in portions of Zion Canyon. Moderate to major impacts on riparian communities along the North Fork within the park, with the greater impact occurring along the channelized and heavily used sections of the North Fork. Incrementally small loss of riparian habitat in the region, but this still would contribute to the continuing loss of riparian areas within the Virgin River watershed.</p> <p>Minor impacts, with mitigation, to other park riparian areas, due to recreational use.</p>	<p>Moderate, long-term, beneficial impacts on riparian communities from permitting the river to use the floodplain in a much more natural manner. Moderate, beneficial effects from the incremental increase in riparian acreage within the Virgin River watershed.</p> <p>Same as the no-action alternative.</p>	<p>Same as the preferred alternative.</p> <p>Same as the no-action alternative.</p>	<p>Same as the preferred alternative.</p> <p>Moderate beneficial effects based on decreased use of many backcountry canyon bottom trails/routes.</p> <p>Minor, long-term, beneficial impacts because of the restoration of the natural flows of six springs, which in turn would restore the small streams and riparian zones supported by these springs to more natural conditions.</p>
Hanging Gardens	Continued potential for impacts on hanging gardens not protected by barriers. Minor, short-term, adverse impacts on gardens due to mitigation that limits damage or loss of vegetation.	Long-term, positive effects due to zoning five locations with hanging gardens as research natural areas, which would help limit future visitor impacts. Continued potential for visitors to adversely affect other hanging gardens; minor, short-term impacts with mitigation measures.	Same as the preferred alternative.	Same as the preferred alternative.
Microbiotic Crusts	Continued localized, long-term, moderate to major, negative impacts on microbiotic crusts within areas of extensive development and trail use. Minor impacts on microbiotic crusts from a parkwide standpoint because most of the approximately 75,000 acres of park lands likely supporting microbiotic crusts would not be subject to disturbance.	Same as the no-action alternative except microbiotic crusts in additional areas would be affected by new development — primarily along the East Entrance and Zion-Mt. Carmel Highway, Kolob-Terrace Road, Kolob Scenic Road, and lower Zion Canyon.	Same as the preferred alternative except for effects to additional microbiotic crusts due to new developments, such as a bike trail paralleling the Kolob-Terrace Road and additional picnic sites along the Kolob Canyons Road.	Minor to moderate, localized reduction in soil compaction and erosion, primarily along the Zion-Mt. Carmel Highway, due to zoning.
Virgin Spinedace	<p>Long-term, minor to moderate, adverse impact on spinedace habitat from diminished pool/riffle habitat and riparian vegetation in portions of the North Fork due to river stabilization measures.</p> <p>Continued reduction in the abundance of larval fish and the ability of fish to feed in high recreational use areas. Major, long-term impact on the population may result if high levels of recreational use occurred on an increasingly greater proportion of the river.</p> <p>Negligible impacts on spinedace populations elsewhere in the park due to low or restricted visitor use levels.</p>	<p>Minor to moderate, long-term benefit to the North Fork population due to river restoration measures that potentially enhance the spinedace population within disturbed areas. Major, long-term, cumulative benefit due to further protection and potential enhancement of this population.</p> <p>Negligible short-term increases in turbidity due to river restoration activities.</p> <p>The potential for new impacts would be minimized along the North Fork based on increased visitor management, although the ability of fish to feed would continue to be adversely affected due to turbidity in high use recreational areas.</p> <p>Negligible to minor impacts on spinedace populations elsewhere in the park due to low or restricted visitor use levels resulting from zoning.</p>	<p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p>	<p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p> <p>Same as the preferred alternative.</p>

TOPIC/RESOURCE VALUE	NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE	ALTERNATIVE A	ALTERNATIVE B
Mexican Spotted Owls	Not likely to adversely affect the productivity of known owl territories due to: the mitigation of potential impacts from closures and signing of side canyons; continued monitoring of spotted owl to assess potential impacts; and implementation of use restrictions, if necessary.	Not likely to adversely affect the productivity of known owl territories due to the mitigation of potential impacts: most owl habitat zoned pristine; trail closures and signing of side canyons off of the main Zion Canyon as necessary; continued owl monitoring; and restrictions on backcountry camping locations. Impacts also avoided with consultation with the U.S. Fish and Wildlife Service prior to the construction of new picnic areas and restrooms along the Zion-Mt. Carmel Highway.	Not likely to adversely affect the productivity of known owl territories, due to most owl habitat zoned primitive and pristine, appropriate mitigation measures, and consultation with the U.S. Fish and Wildlife Service.	Not likely to adversely affect owl populations, with most habitat zoned research natural area and pristine. This alternative would have the least potential of all the alternatives for disturbance of the owls.
Southwestern Willow Flycatcher	Not likely to adversely affect the flycatcher; loss of riparian areas within park would contribute to major loss of riparian areas and potential flycatcher habitat within the Virgin River watershed	Not likely to adversely affect flycatcher; restoration of riparian habitat along the North Fork might result in long-term beneficial effects	Same as the preferred alternative.	Same as the preferred alternative.
Desert Bighorn Sheep	Continued protection from disturbance of all known lambing areas due to year-round closures of Parunuweap and Shunes Canyons. Minor to moderate impacts on sheep in foraging areas due to the potential for unlimited visitor use in frequently used portions of their range. Major impacts could occur, should sheep be displaced from key portions of their range.	Avoidance of visitor use impacts on lambing areas due to zoning. Negligible to minor impacts from sheep research activities. Negligible to minor visitor disturbance to sheep in foraging areas due to zoning, which would permit only low, restricted levels of visitors, and seasonal closures. Minor benefit to sheep from limiting and reducing use in Gifford Canyon, an important sheep use area.	Same as the preferred alternative. Negligible to minor visitor disturbance to sheep in foraging areas due to zoning, which would allow only very low, restricted levels of use, and seasonal closures. Minor to moderate impacts on sheep in foraging areas along the Zion-Mt. Carmel Highway due to the potential for increased visitor use over a large portion of the sheep's range. Major impacts could occur, should sheep be displaced from key portions of their range.	Avoidance of visitor use impacts on lambing areas due to zoning as research natural areas. Negligible to minor impacts from sheep research activities. Minor benefit to sheep from prohibiting or slightly reducing visitor use in most of the sheep's foraging range, primarily Parunuweap and Shunes Canyons and other areas south of the Zion-Mt. Carmel Highway.
Natural Soundscape	Minor to moderate, long-term decrease in natural sounds due to the expected increase in visitation and retention of existing visitor use patterns and vehicle use.	Minor to moderate, long-term decrease in natural sounds due to increases in use levels. Minor reduction in noise levels if vehicle use is reduced on the Kolob Canyons Road. Minor reduction in noise levels with the voluntary shuttle system on the east side.	Moderate increase in noise levels with higher use levels. Minor reduction in noise levels with the voluntary shuttle system on the east side of the park.	Moderate decrease in noise impacts due to reduction in number of facilities and visitor use levels and mandatory shuttle system on park's east side. Minor decrease in noise impacts if vehicle numbers are limited on the Kolob Canyons and Kolob-Terrace Roads.
Range of Experiences/Activities in the Park	Overall long-term, minor to moderate, negative impacts on the range and quality of the visitor experience based on: gradual decrease in the quality and range of recreational opportunities in popular areas; diminished opportunities for quiet and solitude in areas not closely managed; increased crowding and traffic congestion in frontcountry areas other than the main Zion Canyon; and continued unrestricted visitor access to much of park.	Overall, minor, positive impact on most visitor experiences in the front and backcountry based on applying the new zones and the development of a few new visitor facilities. A few saddle stock groups would be adversely affect to a minor to moderate degree, and some visitors may feel their personal choices and access to park resources were being adversely affected by reducing or limiting use levels on 12 trails and routes.	Overall, moderate, positive impacts on most visitor experiences in the frontcountry and moderate, positive and negative impacts on visitor experiences in the backcountry due to: expanded frontcountry scenic driving and biking opportunities and backcountry hiking opportunities; and a number of additional opportunities for visitors to enjoy the park's recommended wilderness, including Parunuweap. Adverse effects on some visitors due to higher encounter levels with other visitors and reduced levels of use in four areas.	Overall, moderate to major, negative impacts on the experiences of many visitors in the frontcountry and moderate, negative impacts on visitor experiences in the backcountry due to: fewer opportunities to experience Zion Canyon above the lodge; fewer opportunities to stay overnight in the park and to ride horses; reduced personal choices generated by the mandatory Zion-Mt. Carmel shuttle in this part of the park; and possible limits or reductions on 17 trails and routes in the backcountry. Positive impact to backcountry visitors based on improved opportunities for solitude and quiet in most areas of the park, and positive impact on some visitors and school groups who use the new education/research center.
Recreational Facilities Nearby to the Park	Negligible to minor, negative effect on the experiences provided at these areas, with increased visitation and the displacement of a few people to nearby recreational areas.	Minor, negative effect on the experiences provided at nearby recreational areas, due to the displacement of some visitors from Zion caused by increased visitor management.	Same as the preferred alternative.	Same as the preferred alternative.
Socioeconomic Environment	Negligible, positive contribution to the overall local/regional economy. Continued moderate to major positive contribution to the local economy.	Overall negligible, positive change in the local/regional economy. Moderate to major, positive effect for a small number of businesses and individuals, based on increased visitation and various construction projects.	Overall, negligible to minor, positive change in the local/regional economy, with increased park use and additional construction projects. Moderate to major, positive, economic benefits to some individuals and firms.	Overall, negligible to major, negative change in the local/regional economy. Minor to major, negative effects on some businesses and individuals based on reduced visitor use and removal of commercial activity in the park. Moderate to major, negative impacts on the concession business and their employees. Benefits to other businesses and individuals due to the elimination of competition and from some development projects in the park.

